The North Pickering Project

Urban Systems Analysis:
Aggregate Analysis of Regional
and Lakeshore Corridor Patterns
[Background Paper No. 6]

December, 1974

Ministry of
Housing

Ontario

Urban Systems Analysis:
Aggregate Analysis of Regional
and Lakeshore Corridor Patterns
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SECTION 1 - OBJECTIVES

This report is part of a series designed to provide a cumulative information base for economic planning decisions relating to North Pickering. Regional and lakeshore patterns, trends and development forces are examined to indicate possible economic profiles for North Pickering under typical market conditions.

Its specific purposes are to:

(a)   review the profile or sectoral split in the urban economic base of a range of places in the central and lakeshore area of the Central Ontario Planning Region (Figure 1);

(b)   interpret as best possible, some of the urban size and other locational characteristics behind variations in the sectoral make-up of the lakeshore's urban places;

(c)   interpret the changing distribution of population (1921-71) and manufacturing employment (1964-71) in the lakeshore area, and

(d)   identify the implications for North Pickering in the regional and lakeshore patterns.

The approach taken in this report, and the secondary urban systems data base generated in the North Pickering Project, are in lieu of a more rigorous, analytical programme which required detail place-of-work employment data for 1971, by June 1974*. Such data is not expected to be available from Statistics Canada before December 1974. The North Pickering planning process is scheduled to conclude by March 1975.

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*See memorandum from D.J.A. Douglas to Mrs. B. Dymond, "Work Programme-Urban Systems Analysis", November 13, 1973.
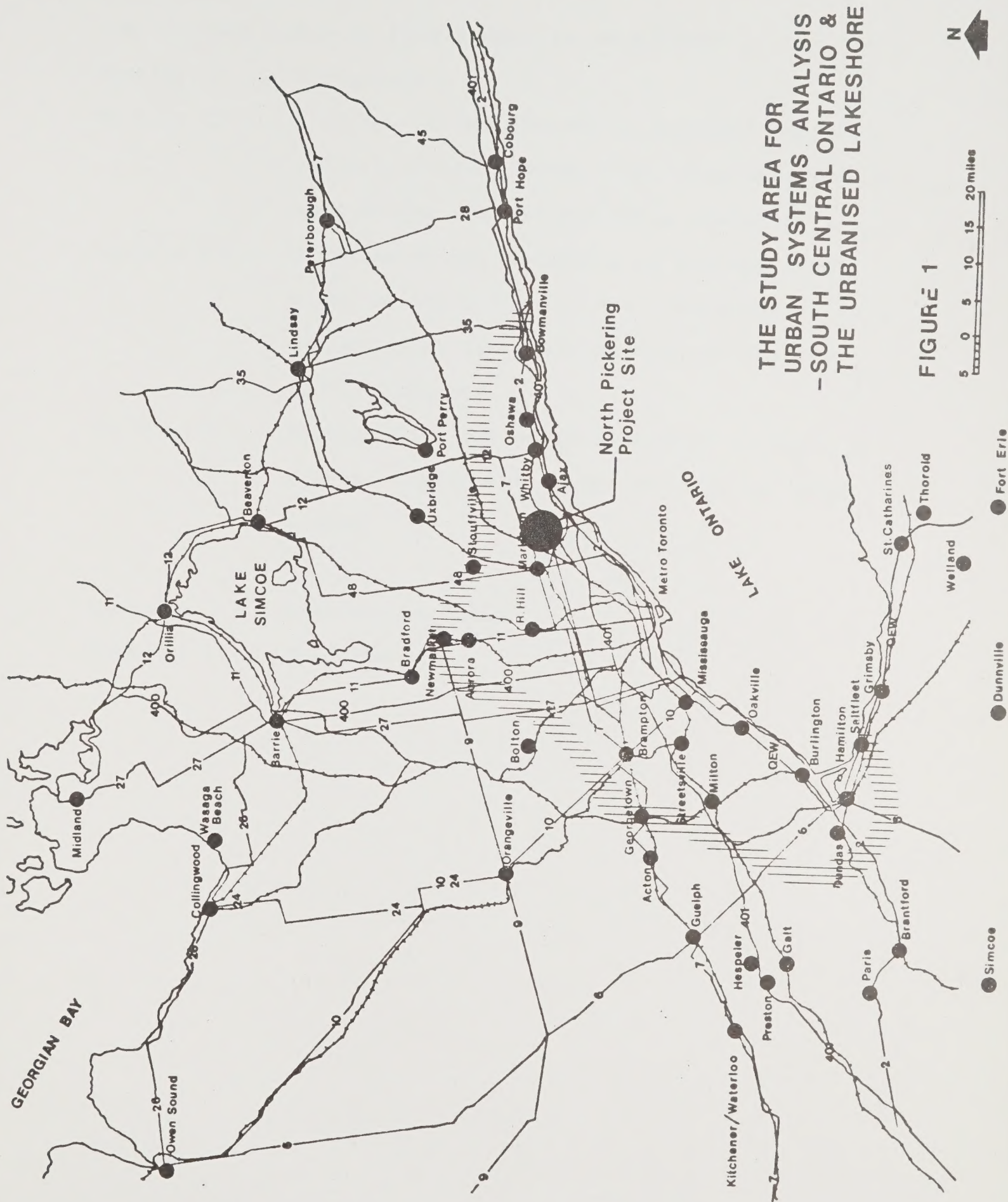
The term "market conditions" is used extensively throughout this report. What is meant by this is those development forces which have operated over the last 20-25 years. These forces are not those of a completely "free" market economy but a mixture of private development interests, consumer preferences and public sector regulation typical of Ontario.

In order to gauge the degree and type of effort required to bring about what *should* happen in North Pickering, this exercise is primarily given over to suggesting what *might* happen. The latter are referred to as "market conditions".

In the present report, urban economic patterns are initially observed at the broad, regional level. These regional perspectives are then modified by factors peculiar to the immediate metropolitan setting, within which North Pickering will develop. In this manner, dovetailing down from the system or regional patterns to the metropolitan environment, a small number of urban economic possibilities are finally generated for North Pickering with a population of 70-90,000.

THE STUDY AREA FOR
URBAN SYSTEMS ANALYSIS
—SOUTH CENTRAL ONTARIO &
THE URBANISED LAKESHORE

FIGURE 1

APPROACH

The approach taken in this report is as follows:

Section I   Objectives

Section II   A review of the systems or regional scene to
                  identify current urban size, location, employ-
                  ment volume and mix and other patterns.

Section III   A review of the lakeshore or metropolitan
                  scene to place the regional perspectives in a
                  context more immediate or appropriate for
                  North Pickering.

Section IV   Implications for North Pickering in terms of
                  growth, employment volume and mix and other
                  issues.

Appendix I   Glossary of Terms

Appendix II   The Data Base

SECTION II - THE REGIONAL PATTERNS

1) Manufacturing Employment Rates

Figure 2 shows manufacturing employment rates (Em/P) for
selected cities in the Central Ontario Planning Region (1970/72)*.
Ajax and Oshawa stand out as manufacturing-dominant places
as do Welland, Galt and Dunnville, outside of the immediate
study area. Some low employment rates are found in places
surrounding Hamilton (Burlington, Dundas and Saltfleet) and
Toronto (Markham, Unionville, Richmond Hill), reflecting the
dormitory roles of these centres. One interesting observation
that can be made is that manufacturing employment rates for
Metro Toronto and its component municipalities, except for
Etobicoke, are approximately or slightly below the average
for centres in the lakeshore region. In the next section, it
will be observed that Metro Toronto has a dominant position
in the shares of regional manufacturing employment and that
it has experienced relatively small decline in these shares
between 1964-71. On the other hand, the employment rates for
Metro do not reflect this regional dominance. This implies
that relative to their size, centres outside of Metro are able
to compete for manufacturing activities. The spatial variations
in the derived manufacturing employment rates are similar to
those in Figure 18. Places with regional shares in manufacturing
employment greater than their population shares correspond to
centres with relatively large employment/population ratios or
activity rates (e.g. Hamilton, Oshawa/Whitby). The opposite
is the case for a place like Burlington.

Figure 3 plots the employment in manufacturing/population

* Table 1 displays the basic urban economic data prepared
  for this study. See Appendix 1 for glossary of terms.

TABLE 1

THE BASIC DATA MATRIX: POPULATION,
MANUFACTURING, RETAIL AND SERVICE EMPLOYMENT
FOR URBAN PLACES IN THE C.O.P.R. (1971/72)

URBAN PLACE	POPULATION 1971	MANUFACTURING EMPLOYMENT/POPULATION (EM/P)	(EM/P) **	RETAIL EMPLOYMENT/POPULATION (ER/P)	(ER/P) **	SERVICE EMPLOYMENT/POPULATION (ES/P)	(ES/P) **
GRAPHICS CODE							
1. Toronto	712,786	11.4	9.7	7.1	4.4	43.5	23.7
2. Scarborough	334,310	9.7	11.5	1.9	5.3	8.5	18.6
3. York	147,301	8.9	13.4	2.7	5.1	9.6	17.1
4. North York	504,150	10.2	10.3	5.6	6.0	12.1	19.4
5. East York	104,784	12.3	11.1	2.6	5.5	12.2	26.5
6. Etobicoke	282,686	16.1	13.8	4.5	5.0	15.8	18.9
7. Metro	2,086,017	11.4	11.0	5.0	5.1	22.6	20.7
8. Newmarket	18,972	4.0	9.7	5.3	4.2	19.8	18.6
9. Aurora	13,893	13.2	9.8	4.2	3.8	11.4	16.7
10. Richmond Hill	32,414	8.6	9.1	4.3	4.8	10.7	18.0
Markham	36,661					8.3	
11. Markham/Unionville	13,500	8.6		3.7			
Vaughan	15,873					37.3	17.7
12. Oshawa	91,587	22.1	16.1	4.8	4.5	11.2	13.4
13. Whitby	25,324	14.5	12.4	5.9	4.5	16.2	14.6
14. Bowmanville	8,947	13.3	13.7	6.1	5.0	7.1	12.9
15. Ajax	12,515	27.3	14.9	7.7	4.6	7.1	1ˊ2
16. Hamilton	309,173	18.9	14.8	3.9	4.3	14.7	14.8
19. Dundas	17,208	6.2	11.2	1.7	4.7	7.0	17.8
20. Hamilton, Dundas, Stoney Creek*	326,381	17.8	.	3.8		14.3	
21. Mississauga	156,070	14.2	12.4	4.3	4.6	15.2	16.7
23. Streetsville	6,840	9.3	16.9	2.7	4.5	5.8	14.9
24. Burlington	87,023	5.5	12.9	5.0	4.8	8.7	14.7
25. Brampton	41,211	15.2	16.8	7.4	4.7	6.3	15.3
26. Bramalea	23,083	32.6		2.6		6.9	
27. Brampton/Bramalea	64,294	21.5		5.7		6.5	
28. Oakville	61,483	17.9	13.2	4.9	4.5	5.9	16.2
29. Georgetown	17,053	11.1	16.9	3.7	3.4	5.1	13.6
30. Malton	12,500	2.0		5.2		10.8	
31. Milton	7,018	19.7	14.0	4.7	3.9	20.5	17.5
32. Acton	5,031	21.2	20.4	4.1	3.9	4.6	11.2
33. Peterborough	58,111	15.9	12.7	5.3		15.9	
34. Lindsay	12,746	17.1	11.5	5.4		17.3	
35. Cobourg	11,282	19.1	13.1	4.5		15.9	
36. Port Hope	8,872	15.9	13.5	4.2		15.4	
37. Barrie	28,845	12.2	7.5	5.5		19.0	
38. Orillia	20,040	13.8	10.1	4.9		22.0	
39. Midland	10,929	33.0	13.9	4.4		14.6	
40. Collingwood	9,775	26.1	14.5	4.9		13.1	
41. Orangeville	8,074	8.6	10.6	5.9		15.7	
42. Penetanguishene	5,497			3.4		14.5	
43. Guelph	60,087	14.6	12.5	4.5		18.7	
44. Kitchener	111,804	19.2	16.6	4.9		15.5	
45. Waterloo	36,677	13.8	12.4	4.3		20.6	
46. Kitchener/Waterloo	148,481	17.9	13.6	4.8		16.8	
Galt	38,897	25.4	22.6	3.9		11.7	
Preston	16,723	20.2	20.2	4.4		13.3	
Hespeler	6,343	38.7	24.8	4.2		10.0	
47. Cambridge	61,963	25.3	22.2	4.0		11.9	
48. Brantford	64,421	17.7	16.8	4.6		13.6	
49. Paris	6,483	14.2	17.1	4.6		12.1	
50. Simcoe	10,793	17.8	9.9	6.0		18.0	
51. St. Catharines	109,722	13.5	12.4	4.7		14.8	
52. Niagara Falls	67,163	9.3	11.2	4.5			
53. Welland	44,397	19.0	16.4	3.5		12.1	
54. Fort Erie	23,113	8.2	10.1	3.8		17.8	
55. Port Colbourne	21,420	15.7	15.8	3.5		12.6	
56. Grimsby	15,770	2.0	11.8	4.4		12.4	
57. Thorold	15,065	27.6	15.9	3.8		11.1	
58. Dunnville	5,576	25.1	13.7	5.7		16.1	

* INCLUDED IN COLUMN 2 ONLY

** EMPLOYMENT BY PLACE OF RESIDENCE

SOME AGGREGATE MANUFACTURING EMPLOYMENT RATES (EM/P) IN TH
C.O.P.R. (1971)

FIGURE 2
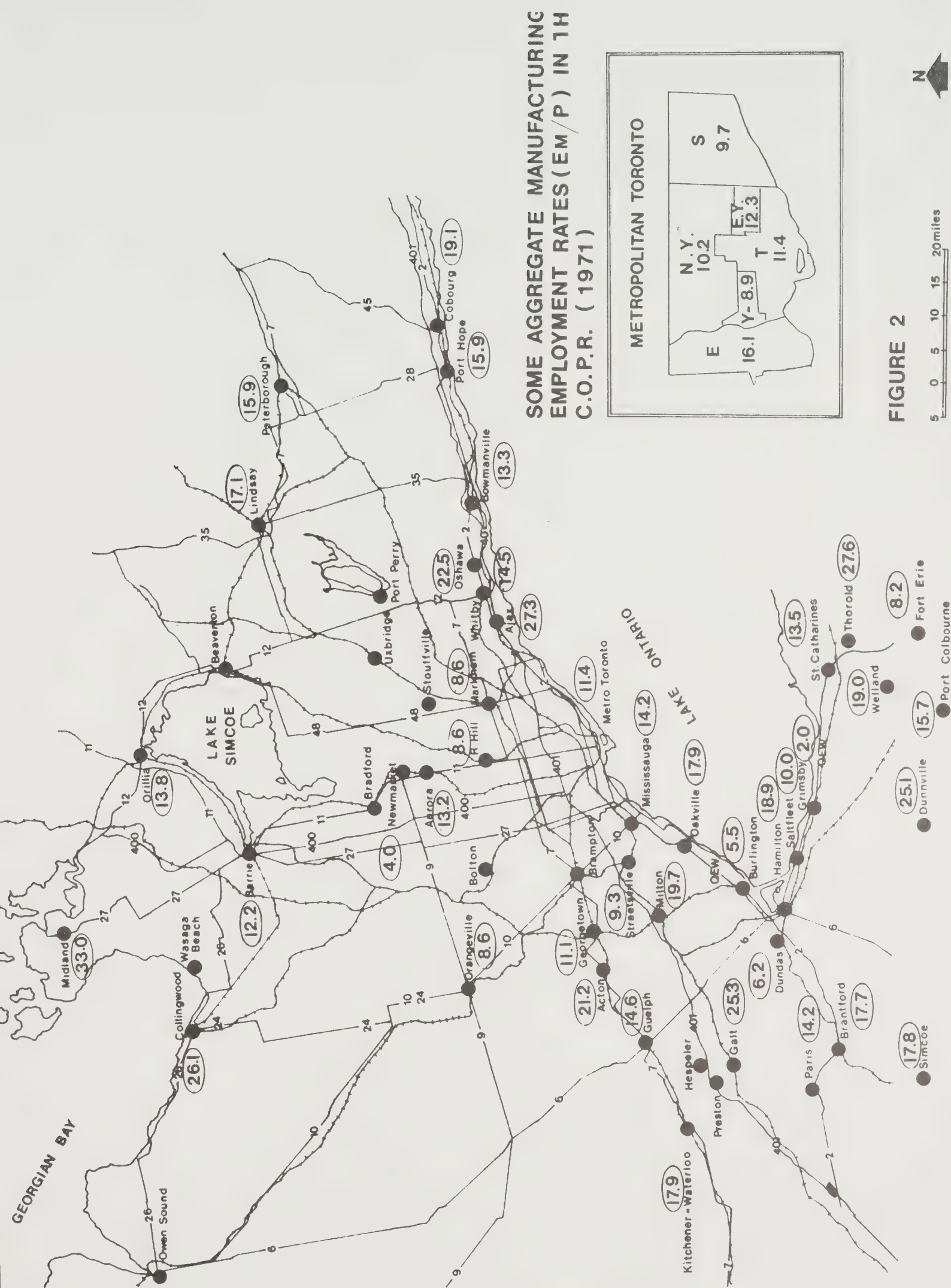
ratios against urban population.* For small places (less than

20,000) there are great variations in the ratios, ranging from

2.0 for Gormley to 33.0 for Midland, thus reflecting the wide

array of functional emphasis evident in small urban places.

Between the 20,000-65,000 population range, there appears

to be to some extent, a curvilinear relationship. Beyond the

85,000 population range, large variations once again appear.

Overall, keeping in mind that the data sample is not an ideal

one, a clear relationship between manufacturing employment rates

and population does not emerge. Variations may be the result of

distance to larger places, as in the case of many small centres,

"specialized" functions, e.g. Burlington as a large dormitory

town, tourism in Niagara Falls and so on. Most important perhaps

is the fact observed by other studies, that for most places locally

generated final demand plays a very minor role in industrial

location.

Figure 4 shows "net manufacturing employment rates" for areas

in the study area. The measures were calculated as follows:

　　(total manufacturing employment - total manufacturing

　　labour force) ÷ population

These reflect the degree to which a city is a manufacturing

employment "sink" or a labour force supplier. A similar

analysis may be made by comparing employment/population and

labour force/population ratios for urban places. For cities

where manufacturing, construction and wholesaling employment

was combined into one category the corresponding labour force

figures were also summed. (These cities are marked by an

asterisk in Table 14.) Therefore places with ratios close to

* To identify the urban places numbered, see the "graphics code"
  on Table 1

MANUFACTURING
EMPLOYMENT / POPULATION
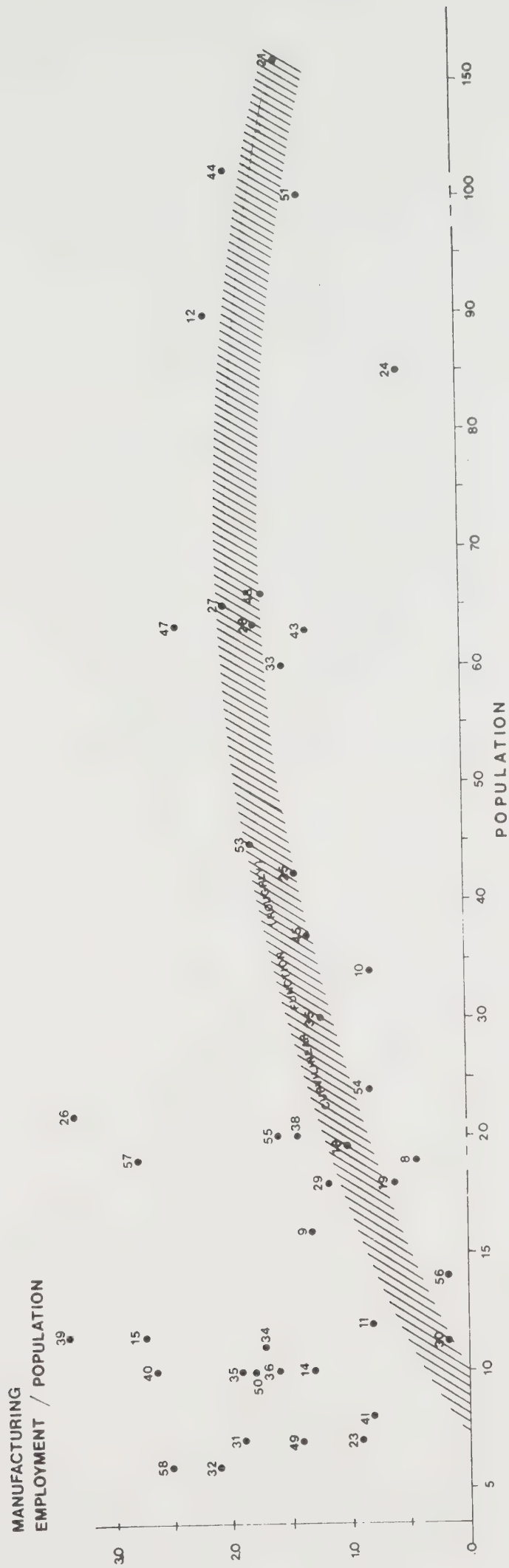
POPULATION

THE RELATIONSHIP BETWEEN POPULATION
AND MANUFACTURING EMPLOYMENT RATE

FIGURE 3

zero may have no or little net employment loss or gain whereas
cities with values less than 0 tend to be donors of employment
(i.e. out-commuting). Those with positive values are net
receivers of employment (i.e. in-commuting). The general
pattern shown in Figure 4 is one of many donors and few receivers.
The major employment "sinks" are found in Ajax (.115), Oshawa/
Whitby (.050 - .014) in the east sector and Bramalea (.094),
Acton (.052), Oakville (.040), Hamilton (.027), Etobicoke (0.14),
and Mississauga (.012) in the west sector. In the north
sector only Vaughan (.085), Aurora (.022) and Markham (.013)
were characterized by net in-commuting. The City of Toronto
had a relatively small value of .010.

In relation to net deficiencies in manufacturing employment,
large negative values are typical east of Metro. This implies
that (a) manufacturing job opportunities are relatively
            concentrated in a few places, and
        (b) that there is considerable inter-urban commuting
            amongst manufacturing employees.
In contrast, the western lakeshore has a longer stretch of
positive values running from Etobicoke to Hamilton, omitting
only Burlington. This contrasting pattern reflects the variety
and the more dispersed or even distribution of manufacturing
industries along the western lakeshore, manifesting the well-
known predominance of this area. In the northern sector,
Vaughan and Markham exhibit positive ratios, the result of
industrial overspill from Toronto and the industrial concen-
tration in the vicinity of the Concorde Yards.

SELECTED
NET MANUFACTURING
EMPLOYMENT RATES

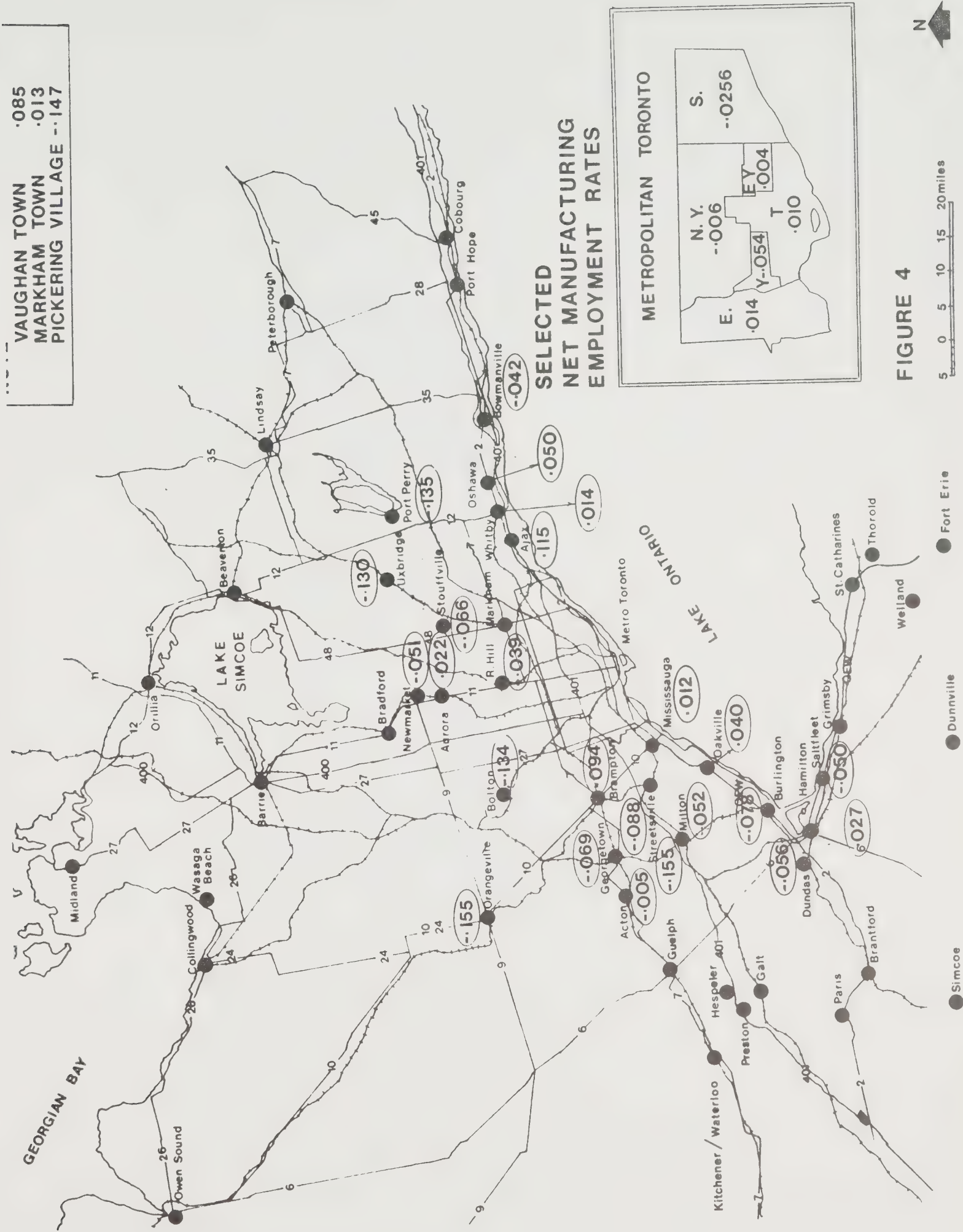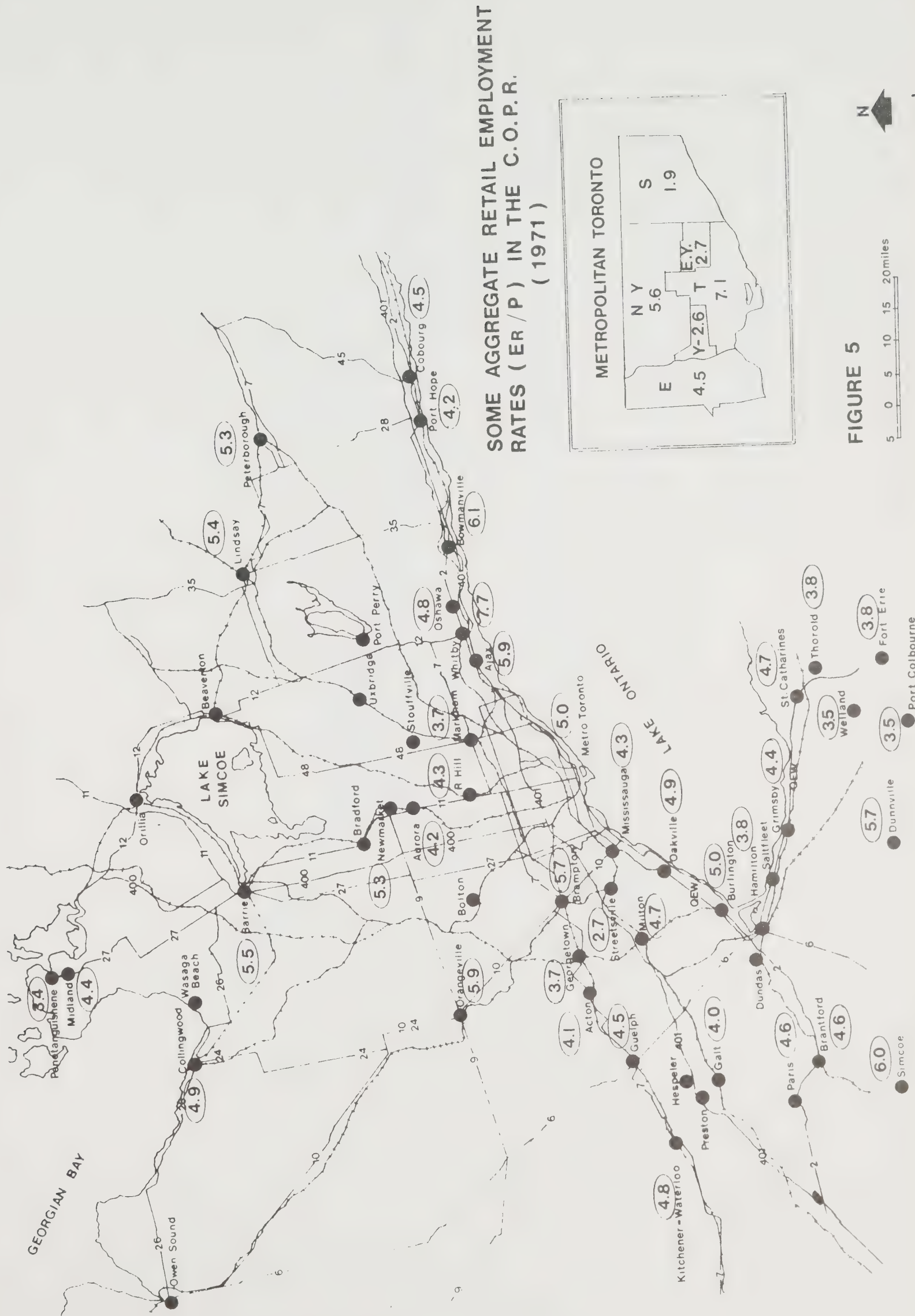FIGURE 4

2) Retail Employment Rates

The pattern of retail employment/population ratios (retail
employment rates), shown in Figures 5 and 6 is self-
explanatory. The proportions of employment in the retailing
sector tends to be relatively stable   irrespective of city
size. As Figure 6 indicates, the majority of ratios fall
between 3.5 and 5.5 right across the city-size spectrum.
The same pattern is apparent in Figure 20 where the regional
shares in retail employment coincides with the population
shares.

In Metro the City of Toronto emerges as a "peak" or as a
dominant source for retail employment opportunities; however,
the role of Toronto City as a major retail employer appears
to be limited to the Metro area, as reflected in the very
low employment opportunities in Scarborough, East York and York.

3) Service Employment Rates

The spatial pattern of service employment/population ratios is
shown in Figure 7 . Several places surrounding Metro Toronto
reflect some degree of service deficiency. Note the relatively
low employment rates for Ajax, Streetsville, Brampton and
Oakville. These towns are dependent upon Metro Toronto for a
considerable range of services. This dependence on nearby
large urban places is also found in Dundas and Burlington
(near Hamilton) and in Georgetown and Acton.

However, Vaughan is an exception to the above pattern. Vaughan's
high value is the result of the location of the Canadian
National Railway freight yard. From the 1971 Census, it was

SOME AGGREGATE RETAIL EMPLOYMENT RATES (ER/P) IN THE C.O.P.R. (1971)

FIGURE 5

RETAIL EMPLOYMENT / POPULATION
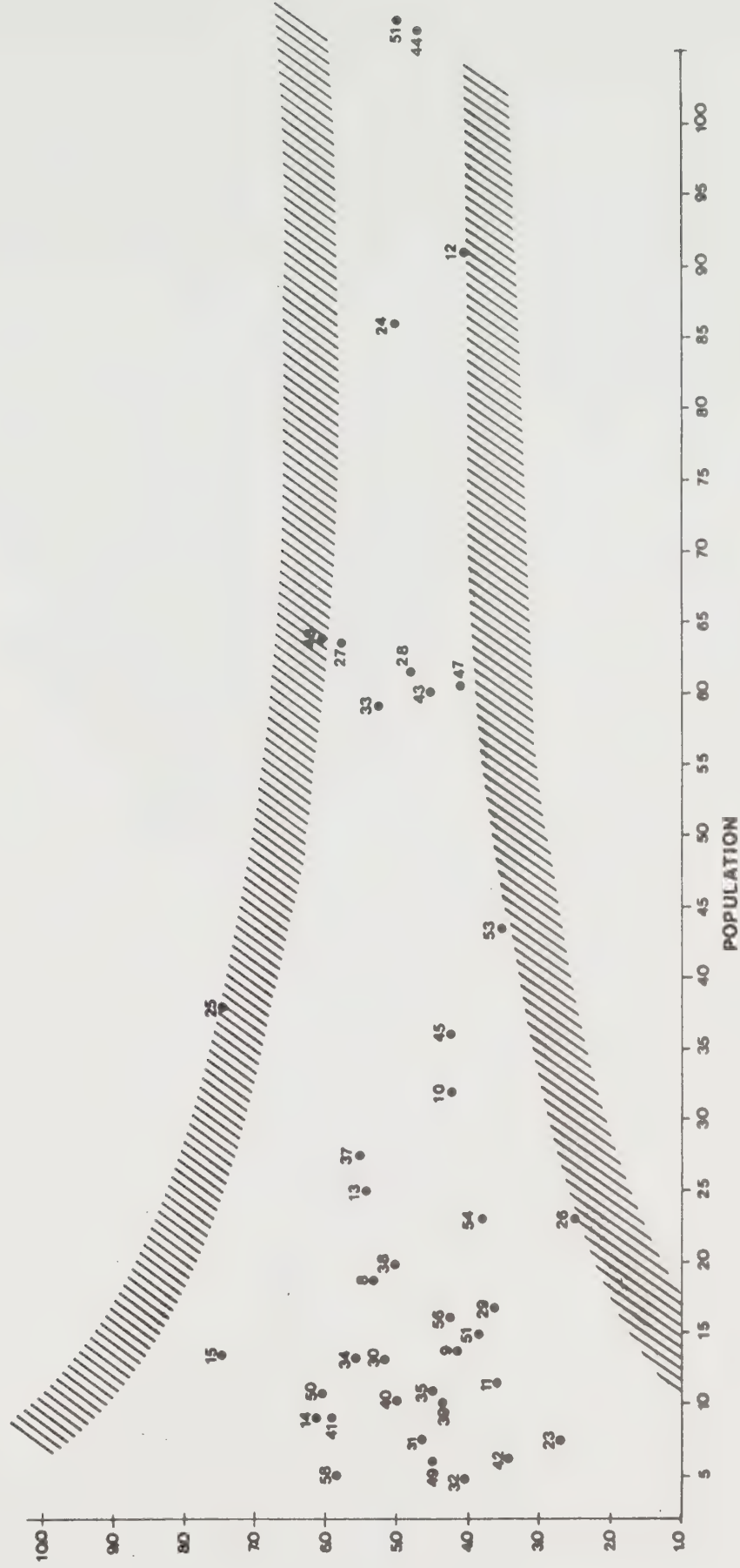
THE RELATIONSHIP BETWEEN THE
RETAIL EMPLOYMENT RATE AND
URBAN PLACE POPULATION

FIGURE 6

found that 3,729 workers out of a total labour force of 5,928 were employed in the transportation, communication and other utilities sector, thus reflecting the importance of the freight yard. Caution must be used, therefore, when interpreting service employment ratios derived from aggregated data.

Mississauga also exhibits a relatively high service employment ratio. This may well be the result of some service overspill from Toronto. However, the city's high service employment ratio must be attributed to the presence of the Toronto International Airport. Mississauga's high ratio may also be explained, in part, by the size of the local market which is large enough to attract a fair range of personal service activities. Given the level of data aggregation, it is not possible to draw any further conclusions on the factors influencing Mississauga's service employment rates.

The influence of Metropolitan Toronto on the service employment structure of nearby centres is particularly evident, in the Northern Corridor. Aurora and Richmond Hill both exhibit relatively low values whereas the northernmost town of Newmarket has a large service employment rate. This high value for Newmarket reflects the town's role as a service centre for the surrounding hinterland, the large hospital as well as the administrative centre function.* Note for example, that the western Borough of Etobicoke also shows a relatively high value (15.8). In the east corridor, a "service spatial spread effect" is not evident. Scarborough and Ajax for example, have service employment rates of 8.5 and 7.1 respectively.

*See "Employment Forecasts: Regional Municipality of York" Kates, Peat Marwick & Co., 1973, p.23.

AGGREGATE SERVICE EMPLOYMENT RATES
(Es/P) IN THE C.O.P.R. (1971)

FIGURE 7
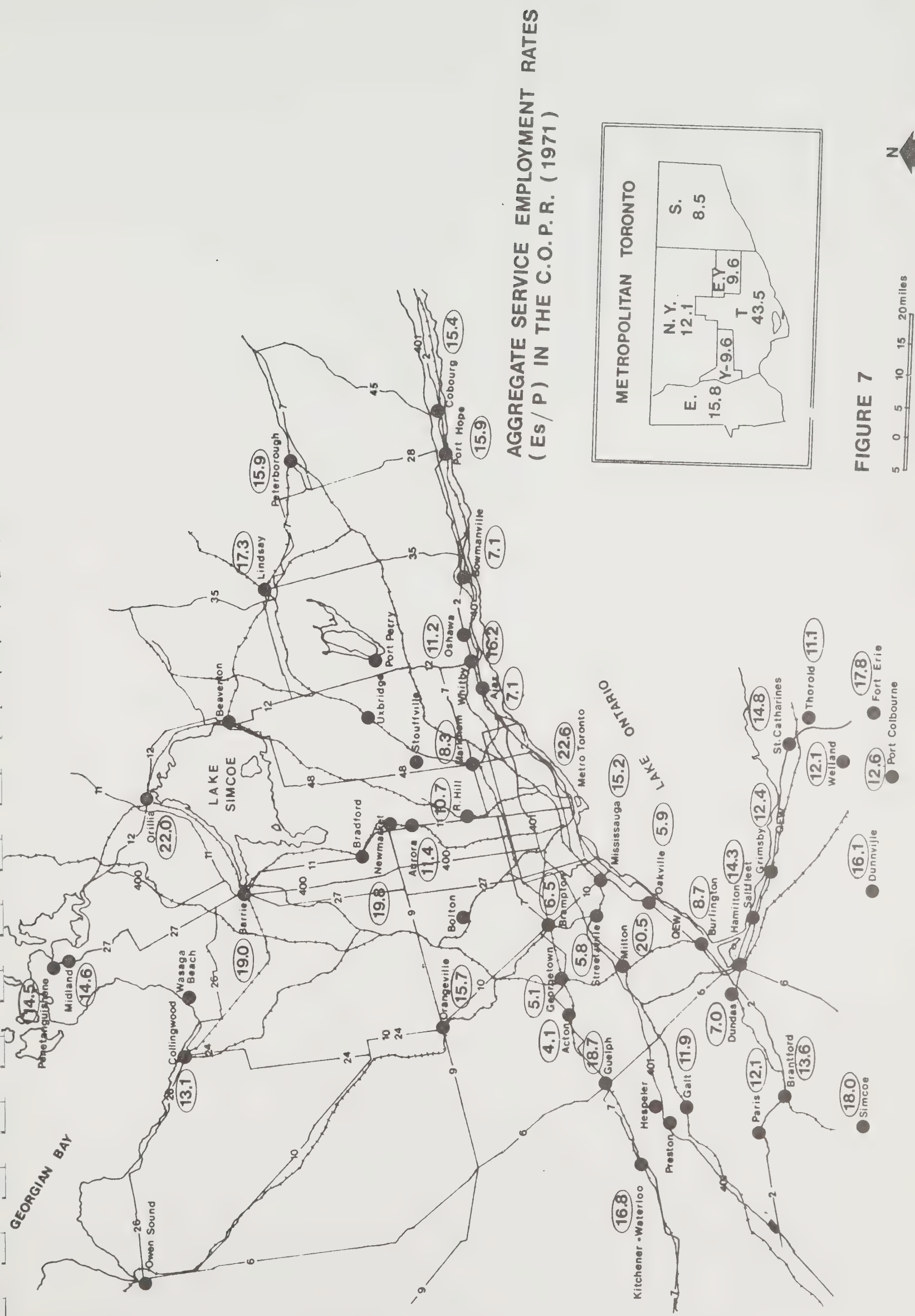
Whitby also provides a surprising exception to the general
spatial pattern of service employment rates. The town's rate
of 16.2 ranks highest among all the places including the
boroughs along the immediate lakeshore zone, except for the
City of Toronto. Within the whole study area, only Toronto,
Milton, Vaughan and Newmarket have higher values. Once again,
it is difficult to account for the high rate from the available
data. It may be more realistic to view Oshawa and Whitby not
as individual cities but as an 'urban complex' in which Whitby
may function as a service centre for much of the urban area,
making up for the relative service deficiency of Oshawa.
Whitby has approximately 44.2% of its employment in the service
sector as compared to Oshawa's 27.6%. However, around 30% of
Whitby's service employment is in the general and the
psychiatric hospitals.

Figure 8 graphs population size against service employment rates
for urban places in the study area as well as for some centres
outside the area. The latter set of centres are included for
comparison purposes as well as to provide a larger number of
observations. No clear relationship between city size and
number of people employed in the service sector emerges.
Considerable variations in Es/P ratios are found throughout the
urban-size continuum. The conclusion to be drawn from this is
that the numbers employed in services is not a simple one
variable function, but instead may be dependent on several
factors such as distance to competing centres, economic base
of the city, the growth rate and so on. It is clear that for
a number of reasons the classical central place relationships
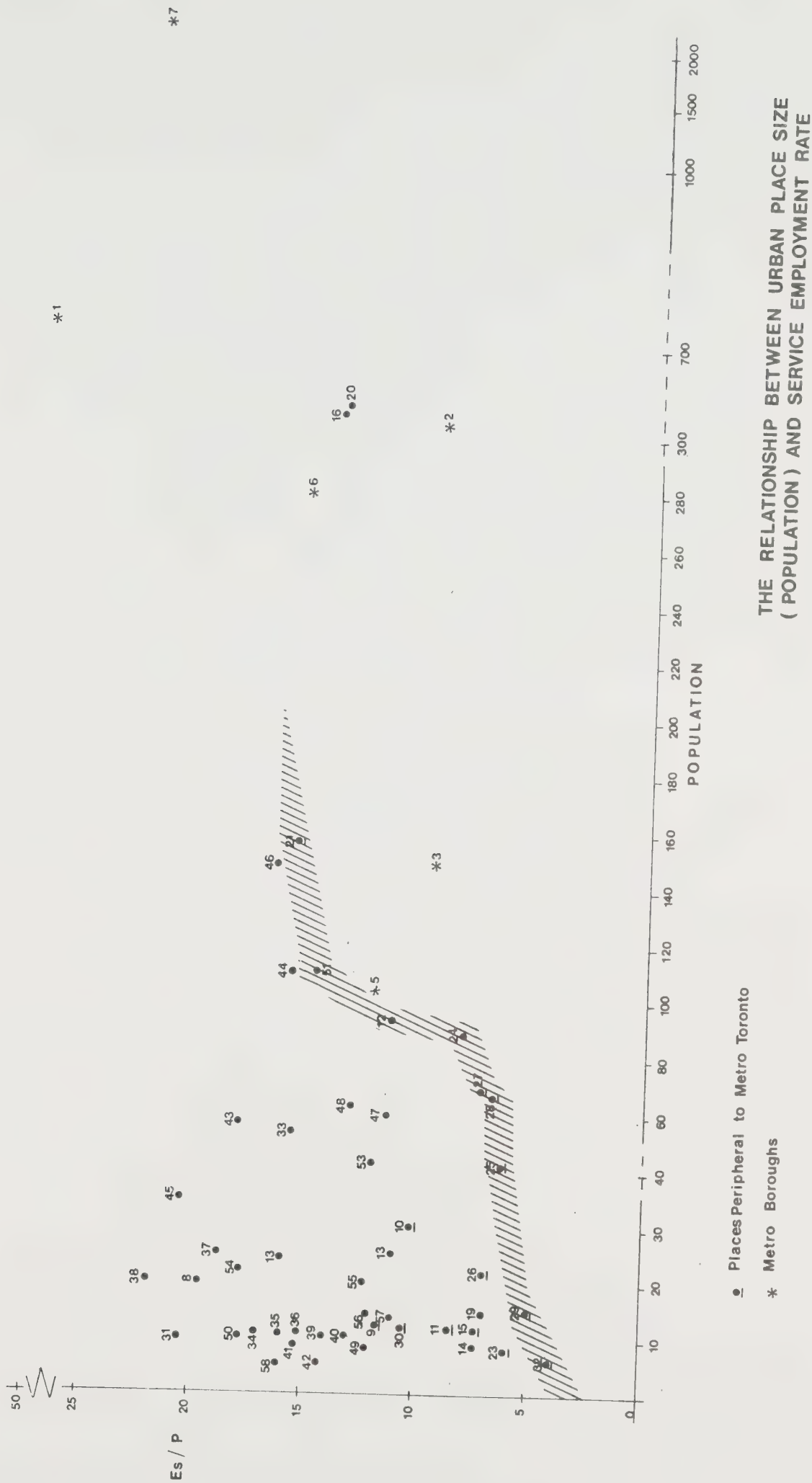are either hidden or grossly complicated in this context. The

THE RELATIONSHIP BETWEEN URBAN PLACE SIZE
(POPULATION) AND SERVICE EMPLOYMENT RATE

FIGURE 8

principal influences are

    i)   the metropolitan or polarization effect, and

   ii)   the urban corridor effect.

Overlying these is the overall bluntness of the data which perforce treats the "service sector" as a homogeneous entity. Up to and around the 60,000 population the scatter of service employment rates is very considerable ranging from Acton (4.6), Georgetown (5.1) and Bramalea (6.9) to Collingwood (13.1), Milton (20.5), Waterloo (20.8) and Orillia (22.0). There are a host of reasons for this scatter, including metropolitan dominance, the presence of large health, welfare (Milton) and educational (Waterloo) institutions to the pre-dominance of classical central place service functions in free-standing, distant places (Orillia, Collingwood), sup-plemented by recreation activities. However, a base rate (zone) can be identified around 5.0 which increases steadily to 10.0 by the 80,000 - 90,000 population level and then up to 15.0 in the 100,000 - 120,000 range. Notwithstanding the dearth of observations around this city-size level there may be a certain stability in this Es/P of 15.0. This rate is maintained from Mississauga through Etobicoke (population 283,000) and the greater Hamilton area (population 330,000). It deviates when service-deficient (8.3) Scarborough or service-rich Metro (22.6) and Toronto City (43.3) are encountered.

To assess North Pickering's prospects at the lower population levels, it was necessary to segregate the circum-metropolitan places from the vast scatter pattern. This reduces the Es/P range considerably to something in the order of 6.5 - 12.0. Beyond the 60 - 80,000 population level a contraction of this

range to 8.0 - 12.0 can be realistically expected. Beyond
the 100,000, the range is more likely to lie between 12.0 and
16.0.

One widely used measure in urban economic analysis is the
location quotient. Location quotients are rough measures of
the degree of specialization in a particular sector of the
economy in a city, relative to some aggregate geographical
unit (e.g. Canada, Ontario or the sum of all cities in a study
area). The location quotient used here, with service employ-
ment as an example, is calculated as follows:

$$L.Q._i^S = \frac{\dfrac{\text{Service Employment in City i}}{\text{Total Employment in City i}}}{\dfrac{\text{Service Employment in all Cities}}{\text{Total Employment in all Cities}}}$$

As defined above, a location quotient for a city is a measure
of the degree of specialization in services relative to the
entire Central Ontario region.* If it is assumed that the
regional total approximate the total for all urban places in
the region (i.e. no service employment is located in the rural
areas or in towns not included in the analysis), the location
quotient may be viewed as a specialization index, relating
each place to all other cities. Cities with location quotients
greater than 1.0 are considered to have greater service
employment than suggested by their size (total employment).
The reverse is the case if the quotient is less than one. The
important thing to note is that it is the relative specialization
which is of interest. The use of location quotients is not
without limitations. However, notwithstanding these limitations

*Location quotients and similar indices of concentration have been
more widely used in comparing specialization in manufacturing
sectors between cities. Without qualifications they assume a
statistically normal distribution of occurrences.

these indicies do give some indication of the relative

competitiveness (post facto) between cities for service activities.
(Figure 9)

The location quotient for the nineteen urban places for which

data was available, in the study area are shown in Table 2 .

Total service employment, expressed as a percentage of total

employment for each city, is also shown in Table 2 . The cities

are then classified according to the amount a city is more

specialized, or less specialized, than the typical (average) city.

Some cities are not included (e.g. Vaughan) in Table 3 because

of the unsuitability of the data or spatial unit.

TABLE 2

THE RELATIVE SPECIALIZATION
OF SELECTED URBAN PLACES
IN SERVICE ACTIVITIES

Urban Place	Service Employment/ Employment %	Service Location Quotient
Newmarket	62.3	2.34
Milton	59.1	2.22
Metro Toronto	48.1	1.81
Whitby	44.1	1.66
Richmond Hill	40.5	1.52
Mississauga	38.5	1.45
Aurora	38.3	1.44
Hamilton	36.9	1.39
Burlington	36.0	1.35
Markham-Unionville	35.4	1.33
Streetsville	28.2	1.06
Oshawa	27.5	1.03
Georgetown	24.3	0.91
Bowmanville	22.2	0.83
Brampton	19.5	0.73
Ajax	17.0	0.64
Oakville	16.7	0.63
Bramalea	15.9	0.59
Acton	10.5	0.39
Region	26.6	1.00

AGGREGATE SERVICE EMPLOYMENT
LOCATION QUOTIENTS IN THE C.O.P.R.
(1971)

FIGURE 9

TABLE 3 : A GROUPING OR URBAN PLACES ON THE BASIS OF SERVICE PROVISIONS

GROUP	URBAN PLACE	SERVICE LOCATION QUOTIENT	SOME EXPLANATORY FACTORS
1	Newmarket	2.34	Regional Functions; Hospital
(Surplus)	Milton	2.22	Several Major Health, & Educational Institutions.
	Metro Toronto	1.81	Primate Place; International, National & Regional Functions.
	Whitby	1.66	Major Psychiatric and General Hospital.
2	Richmond Hill	1.52	Acts as a Sub-Centre in Metro Toronto; Service Sector dominates modest level of local employment.
(Moderate Surplus)	Mississauga	1.45	Enough Population for Large Personal Service Sector; Malton airport.
	Aurora	1.44	Sizeable manufacturing base: Retail Functions dominated by Newmarket/ Richmond Hill.
	Hamilton	1.39	Stability in Manufacturing Employment: Emerging Metropolitan Maturity.
	Burlington	1.35	Modest level of manufacturing employment: Dormitory to Hamilton; City size large enough for considerable range of personal services.
	Markham-Unionville	1.33	Little Manufacturing; Central Place and Metropolitan sub-centre roles. Service Employment dominates modest level of local employment.
3	Streetsville	1.06	Well developed retail central place functions: Sizeable manufacturing sector (45% of total employment)
(Average)	Oshawa	1.03	High manufacturing employment keeps proportion in central place/admini- strative functions relatively small.
4	Georgetown	0.91	Dormitory Centre: Competition from Guelph (West), and Brampton-Bramalea (East). Situation probably unstable with lags.
(Moderate Deficit)	Bowmanville	0.83	High manufacturing employment (42%). Possible service dominance by Oshawa-Whitby (5-8 miles).
	Brampton	0.73	High concentration of manufacturing activities.
5	Ajax	0.64	High manufacturing employment levels, average retail, Metro dominance.
(Deficit)	Oakville	0.63	Relative high employment in manufacturing (Em/E = 64%), dormitory city for Toronto, service dominance from Metro.
	Bramalea	0.59	High manufacturing, large dormitory population, services from Mississauga and Metro.
6 (Large Deficit)	Acton	0.39	Relatively high manufacturing employment, service domination from Guelph and Kitchener-Waterloo.

The median value of total employment in services is 35.4%
which corresponds to the median location quotient of 1.33. These
figures are those for Markham-Unionville. Table 2 also
indicates a considerable range of 51.8% of employment in
services (Newmarket having the highest value of 62.3% with
Acton having the lowest, 10.5%; Metro Toronto has a value of
48.1%). The range between the median and the lowest is 24.9%;
the range for the upper half is 26.9%. It is interesting that
the median value of 35.4 found in Markham-Unionville corresponds
to location quotient of 1.33 which is significantly greater
than 1.00*. The implication is that within the given study
area, it is not at all untypical for a city to have a larger
service sector (in terms of employment) than is suggested from
the data for the region itself. Indeed over 63% of the cities
surveyed have service employment concentrations greater than
the region itself.

The question which emerges from the above empirical patterns is
what accounts for this relatively high specialization in the
service sector among the cities. A few possible reasons are
suggested here. First, it must be re-emphasized that the avail-
able data is highly aggregated. Little is known of the break-
down for each city in services; therefore, if a city has one
large employer in the service sector (e.g. the CN freight yards
in Vaughan) the derived values may not be realistic indicators
of the relative deficiency (or excess) in services. Therefore
a city may have a high service location quotient but still not
function as a regional or sub-regional service centre, depending

*i.e. The distribution of service location quotients is "skewed"
where a value of 1.0 or an arithmetic average is not
indicative of a mid-point or "typical" value.

on the actual composition of the service sector. Many cities
may be 'exporting' services outside the urban place itself
(which is implicit in the meaning of location quotients) and
probably outside the entire region. In other words, some cities
are service centres, not for residents in the hinterland, but
for consumers outside the lakeshore area altogether. An
excellent example of this is found in Malton. Similar external
factors influence the size of service employment at Vaughan.

It can be seen that from two basic characteristics of North
Pickering,

    i) the circum-metropolitan location, and

    ii) the likely predominance of manufacturing activities,
it could replicate the pattern evident in Ajax, Bramalea or
Brampton. Except for the dormitory factor, Oakville and
Georgetown are not likely analogies for North Pickering. Only
Richmond Hill and Markham-Unionville as analogies, *prima
faciae*, have a relative surplus in service employment. Formerly
these functioned as central places with a modest manufacturing
base. They now function as sub-centres within the metropolitan
matrix. With North Pickering's likely endowment of considerable
manufacturing activities, the Richmond Hill and Markham-
Unionville service levels will not automatically occur. It is
suggested therefore that these computations indicate a moderate-
to-large relative deficiency in North Pickering's service base,
under normal market conditions.

4) Wholesale and Construction Employment Rates

The data on construction and wholesale employment is very
uneven. While these activities account for a relatively small
proportion of urban employment, it is worthwhile for complete-
ness sake, to estimate the possible order of magnitude of these
activities in North Pickering's sectoral split.

Table 4 presents estimates of wholesale and construction
employment for various lakeshore communities for 1970/71. These
have, in the main, been derived by relating the Census of
Manufacturers data to the M.T.T.P.R.* tabulations. Wholesale
and construction employment rates ($(Ew + Ec)/P$) and activity
rates ($(Ew + Ec)/E$) have been computed. Initiutive estimates
of 1981/86 levels have been suggested for all places.

While the massive social infrastructural (schools, hospitals)
expenditures of the 1950-60's may not recur in the next decade,
there will be some major public works undertakings such as
trunk sewage schemes and possibly major freeway and airport
developments. In addition, the household-forming component of
the population is projected to continue its increase over the
1971-'86 period. Thus, while the 1950-60's pattern may not be
repeated and the wholesale/construction sectors may not be
major growth areas, there appears to be sufficient potential
activity in the construction sector alone in the lakeshore
area, to restrain the relative and capital-induced employment
decline of these sectors. However, the prospects for wholesale
and construction employment must vary throughout the lakeshore.
Elaboration on the intuitive changes indicated in Table 4 ,
is in order.

* Metropolitan Toronto Transportation Plan Review.

ESTIMATES OF WHOLESALE AND CONSTRUCTION EMPLOYMENT FOR LAKESHORE URBAN PLACES - 1970/72

TABLE 4

URBAN PLACE	POPULATION	TOTAL EMPLOYMENT (E)	WHOLESALE & CONSTRUCTION EMPLOYMENT (Ec+w)	WHOLESALE & CONSTRUCTION EMPLOYMENT/POPULATION (Ec+w/P)	WHOLESALE & CONSTRUCTION EMPLOYMENT ACTIVITY RATE (Ec+w/E) ** %
Toronto City	712,786		44,436		
Scarborough	334,310		22,340		
York	147,301		3,949		
North York	304,150		43,517		
East York	104,784		5,473		
Etobicoke	282,686		22,152		
Metro Toronto	2,086,017	980,000	145,867	6.99	14.88 (12)
Newmarket	18,972	6,033	187	0.9	3.1 (5)
Aurora	13,893	4,140	28	0.2	0.7 (3)
Richmond Hill	32,414	8,622	493	1.5	5.7 (6)
Markham (Town)	36,684	13,528	2,540	6.9	18.77 (20)
Markham-Unionville	13,500	3,186	378	2.8	11.86 (10)
Oshawa	91,587	37,233	2,225	2.4	5.97 (8)
Whitby	25,324	9,290	-	-	- -
Bowmanville	8,947	2,862	473	5.3	16.5 (15)
Ajax	12,515	4,588	645	5.2	14.1 (15)
Pickering***	19,219	-	-	-	- -
Hamilton	309,173	123,685	3,653*	1.2*	2.95* (4)
Stoney Creek	8,380	-	-	-	- -
Saltfleet Twp.	18,993	5,485	-	-	- -
Dundas	17,208	-	-	-	- -
Mississauga	156,070	61,620	8,929	5.7	14.49 (15)
Port Credit	9,442	-	-	-	- -
Streetsville	6,840	1,404	177	2.6	12.6 (16)
Burlington	87,023	21,138	3,742	4.3	17.7 (15)
Brampton	41,211	13,388	1,431	3.5	10.68 (9)
Bramalea	23,083	10,061	-	-	- -
Oakville	61,483	21,788	-	-	- -
Georgetown	17,053	3,624	202	1.2	5.57 (6)
Malton****	12,500	2,287	-	-	- -
Milton	7,018	2,935	374	5.3	12.74 (8)
Acton	5,031	2,200	688	13.7	31.27 (30)

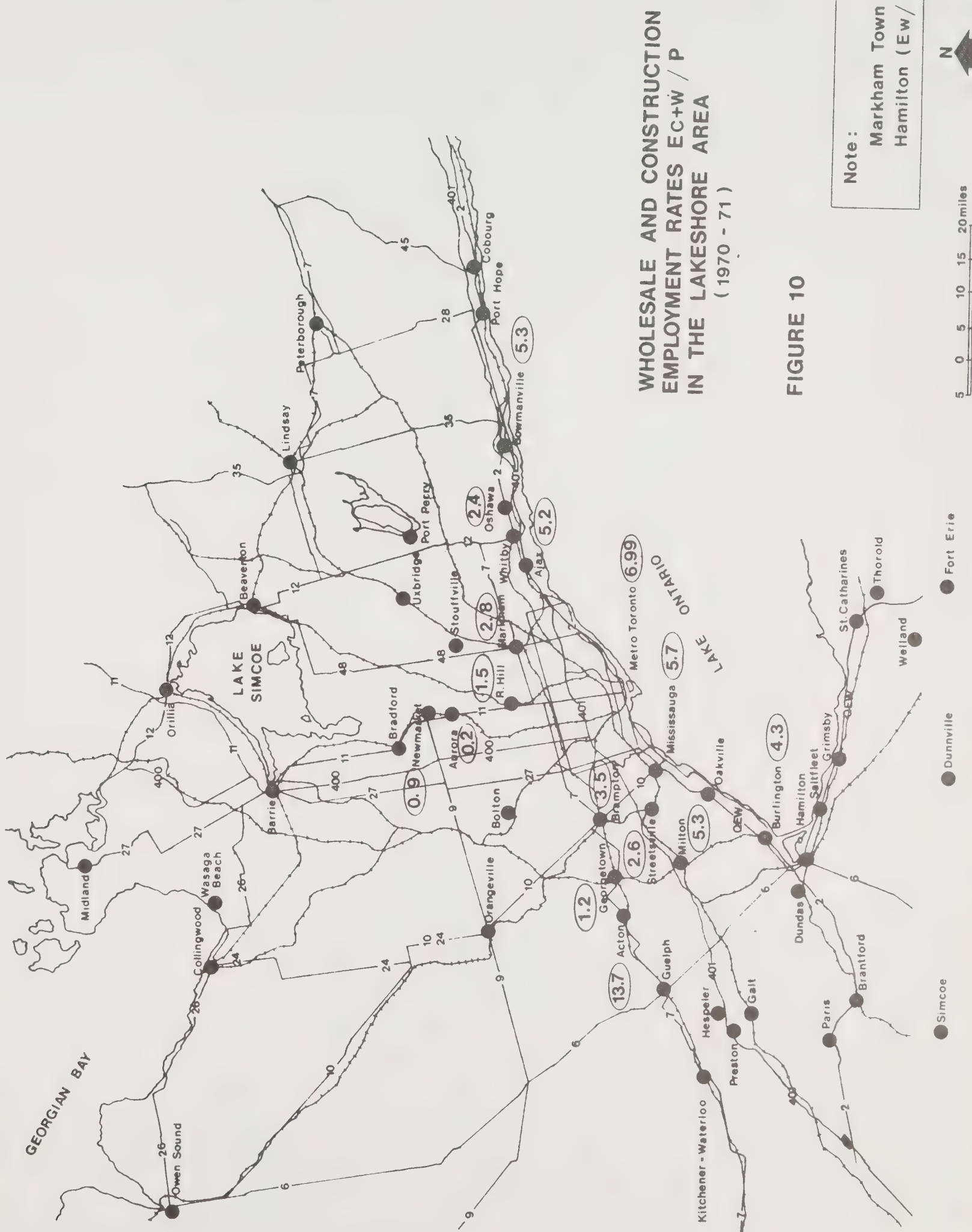* Wholesale Employment only.

** Figures in brackets represent intuitive estimates of the proportion of employment likely to be in wholesale and construction by 1981/86.
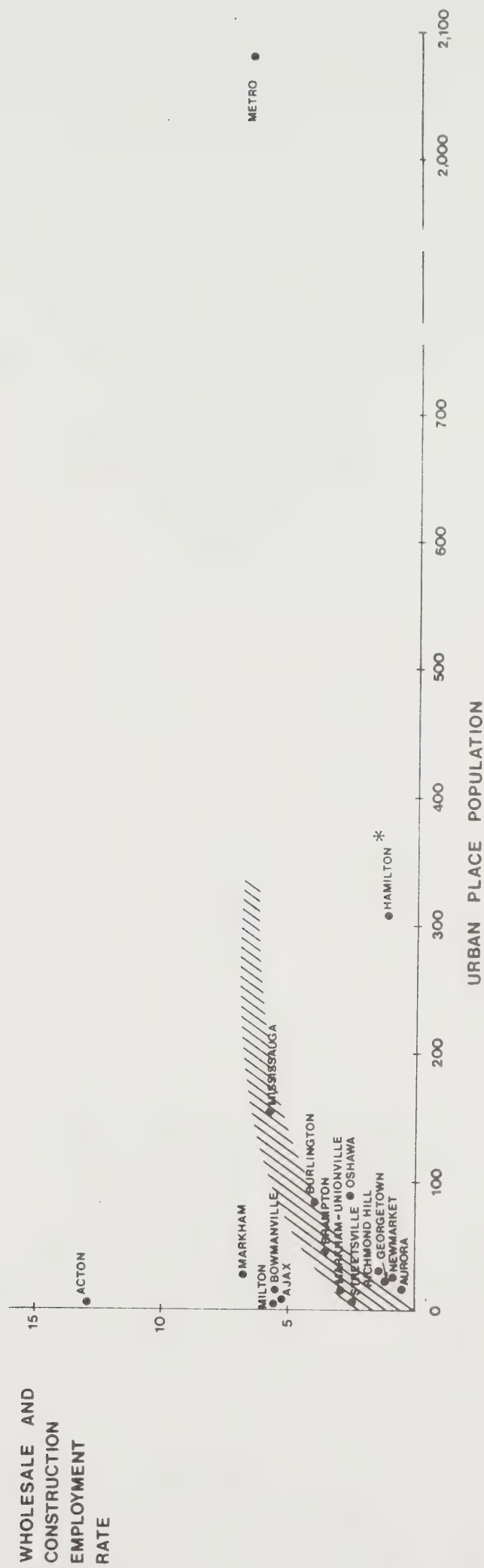
*** Pickering = Township minus Ajax.

**** Airport employment in Mississauga.

Metropolitan Toronto's large-scale construction period is
expected to ease up a little. Space-consuming and transport-
hungry wholesale activities are expected to continue to gravitate
to the periphery. Combining these trends, Metro's proportion
of employment in wholesale and construction is nominally reduced
from 14.88% to 12.0. An acceleration in local housing construction
is expected to increase Newmarket and Aurora's E(w+c)/E from 3.1%
to 5.0% and 0.7% to 3.0% respectively. While there will undoubtedly
be considerable residential activity in the Richmond Hill area
over the next decade it can be expected that the South Central
York Servicing Scheme and other developments will increase
manufacturing and related activities in this area. A modest
relative increase is suggested here. The Town of Markham
(former Township) has a high 18.77% in wholesale and construction
activities. This more than likely reflects a high concentration
of construction-related activities associated with the numerous
sand and gravel operations along the Oak Ridges moraine.
Residential developments around Metro can be expected to keep
this proportion fairly high over the 1971-86 period. Similar
reasoning has been applied to the other urban places cited.
Some places, which increasing local construction activity may
also expect a considerable expansion in convenience retail and
service activities (e.g. Georgetown, Markham-Unionville, Ajax).
The *relative* growth here may be marginal. For Hamilton where
only wholesale data was available, an expansion of Hamilton's
metropolitan functions is suggested in the increase from an
Ew/E of 2.95% to 4.0%.

The present spatial pattern of wholesale and construction
employment rates is little short of random. (Figures 10 & 11)

WHOLESALE AND CONSTRUCTION
EMPLOYMENT RATES EC+W / P
IN THE LAKESHORE AREA
(1970 - 71)

FIGURE 10

Note :

Markham Town   6.9
Hamilton (Ew/P)   1.2

WHOLESALE AND
CONSTRUCTION
EMPLOYMENT
RATE

WHOLESALE AND CONSTRUCTION EMPLOYMENT RATE (Ec+w / P)

15

10

5

0

•ACTON

•MARKHAM

MILTON
•BOWMANVILLE
•AJAX

•BRAMPTON
•MARKHAM-UNIONVILLE
•STREETSVILLE •OSHAWA
•RICHMOND HILL
•GEORGETOWN
•NEWMARKET
•AURORA

•BURLINGTON

MISSISSAUGA

•HAMILTON *

METRO •

0   100   200   300   400   500   600   700   2,000   2,100

URBAN PLACE POPULATION

* WHOLESALE EMPLOYMENT ONLY

THE RELATIONSHIP BETWEEN THE WHOLESALE AND
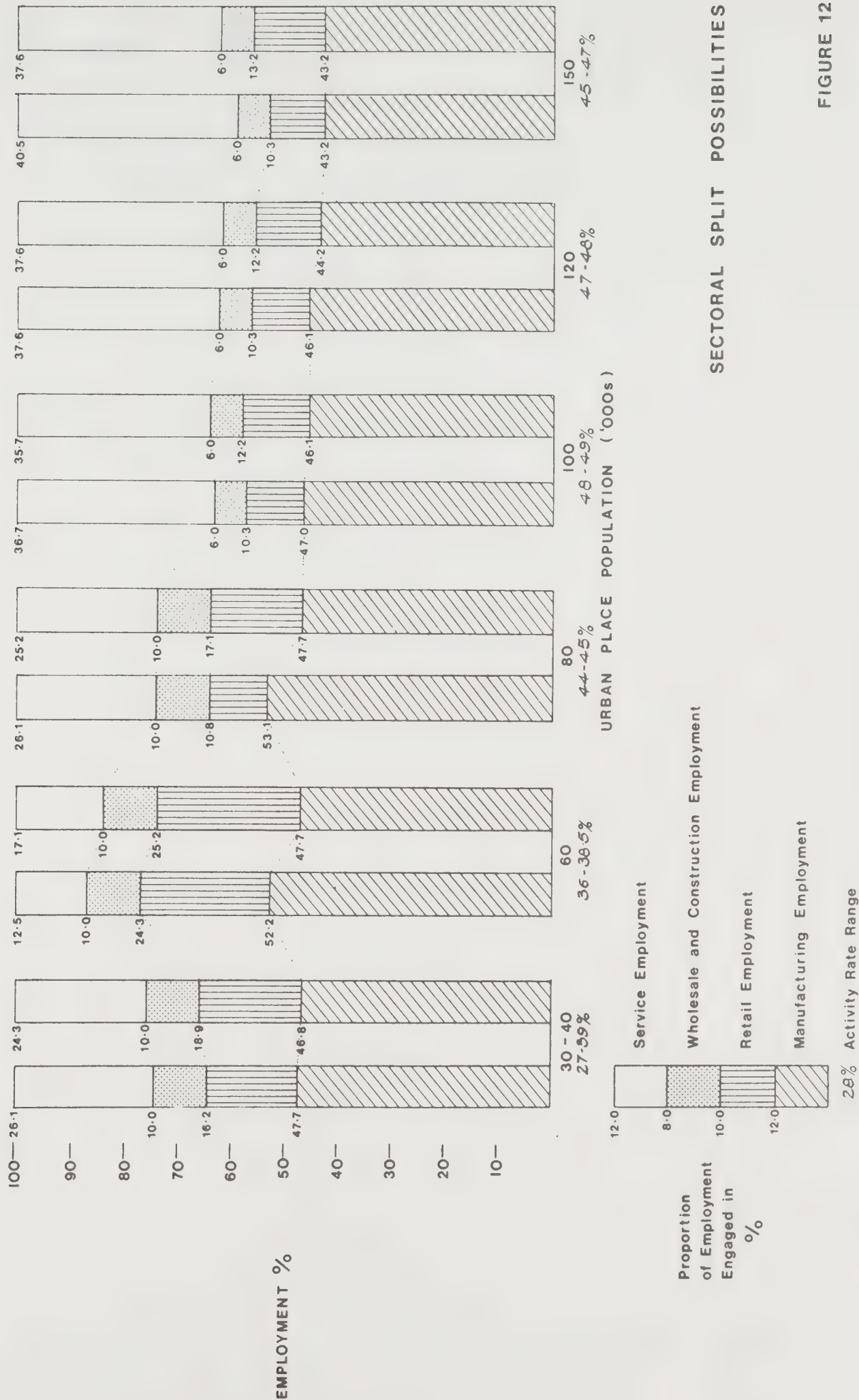CONSTRUCTION EMPLOYMENT RATE (Ec+w / P) AND
URBAN PLACE POPULATION

FIGURE 11

Outside of a dominant core (Metro, 6.99) and relatively high
lakeshore levels there is little regularity. Acton has a very
high 13.7 rate whereas the central places of Newmarket and
Aurora have rates of 0.9 and 0.2 respectively. There are a
number of factors however, which suggest a relatively *high*
rate for North Pickering in the 1977 - 86/91 period.

1. A high level of residential, road, services and other
    construction activities.
2. The possibility of airport and related access and
    engineering activities.
3. The possibility of wholesale activities gravitating
    toward prime access ("in-out") facilities in the area.

These factors suggest that the low circum-metropolitan levels
evident in Richmond Hill (1.5) or Markham-Unionville (2.8)
will not be replicated. The Brampton (3.5) or Mississauga
(5.7) rates would even be a realistic minimum for estimating
North Pickering's prospects. A *working* estimate of 10.0 is
suggested for urban population levels from 30 - 40,000 through
to 80,000. Beyond this the *relative* position of these sectors
could contract to around the 6.0 level. All of this depends
upon the amount of construction concentrated into various years,
over the 1977-86 period,as well as the relative maturity of
urban economic development where the wholesale (i.e. urban/
regional) functions thrive.

EMPLOYMENT %

100— 26·1

90—

80— 10·0

70— 16·2

60—

50— 47·7

40—

30—

20—

10—

24·3 | 30 - 40 | 27-39%

10·0

18·9

46·8

12·5 | 60 | 36-38·5%

10·0

24·3

52·2

17·1

10·0

25·2

47·7

26·1

10·0

10·8

53·1

25·2 | 80 | 44-45%

10·0

17·1

47·7

36·7 | 100 | 48-49%

6·0

10·3

47·0

35·7

6·0

12·2

46·1

37·6 | 120 | 47-48%

6·0

10·3

46·1

37·6

6·0

12·2

44·2

40·5 | 150 | 45-47%

6·0

10·3

43·2

37·6

6·0

13·2

43·2

URBAN PLACE POPULATION ('000s)

Proportion
of Employment
Engaged in
%

12·0   Service Employment

8·0   Wholesale and Construction Employment

10·0   Retail Employment

12·0   Manufacturing Employment

28% Activity Rate Range

SECTORAL SPLIT POSSIBILITIES

FIGURE 12

Note: These urban employment profiles, generated from empirical regional
patterns, contain the high 6-10% wholesale and construction
employment estimate expected in a new town setting.

SUMMARY

The broad patterns of urban economic structure evident in the

Central Ontario Region can be summarized as alternative

employment profiles or sectoral splits, associated with a series

of urban-size groups (Figure 12)*.   To provide some guidance

on the *market* prospects for North Pickering up to 1986/91, these

sectoral splits are referred to as "possibilities". They

summarize the regional or systems influences which may condition

North Pickering's urban economic base. Also included are the

relative employment volumes or activity rates (ranges) associated

with a series of urban-size groups.

The lakeshore or metropolitan context will now be reviewed in

order to assess the degree to which these general possibilities

might be modified by more localized circumstances.

* Employment rates E_i/P) have been translated into sectoral
  splits i.e., E_i/E.

SECTION III - LAKESHORE OR METROPOLITAN PATTERNS

In this section some broad patterns of development along the
Lake Ontario lakeshore from the Hamilton area in the west to
Newcastle in the east, are reviewed. This is done by examining
the distribution of population and sectoral employment shares
among the urban places along the lakeshore, over various periods.
This will improve our understanding of the present and probable
future development context for North Pickering in the
metropolitan and lakeshore settings.

THE LAKESHORE - AGGREGATE POPULATION PATTERNS 1921-1971

The aggregate pattern of development along and around the lake-
shore is displayed in Figure 13 . This plots the shares of
populations, 1921-71, accruing to various Townships and Boroughs
in various zones around Toronto.* Figure 14 indicates the
areas included within each zone. The zones include areas approxi-
mately equidistant from Toronto. Development over the period
is commented upon on the basis of simple distance relationships.

The pattern over the fifty year period is one of typical
metropolitan dominance, contrasted with modest peripheral growth
and an intermediate "trough". The aggregate relationships
between these principal components have varied over the years.
In the 1921-41 period, the aggregate lakeshore pattern was one
of increased polarization with the non-metropolitan areas
loosing or marginally increasing their shares. Since 1941-51,
the trend has been toward increased homogeneity. In the 1921-31
period Toronto as defined, increased its share of the regional
population. Since 1931, Toronto and Hamilton have been loosing

---

*Toronto is here defined as the City, East York, York, North
York, and Etobicoke. (See Figure 14)

FIGURE 13

AGGREGATE LAKESHORE POPULATION
SHARES BY BROAD ZONES, 1921-1971

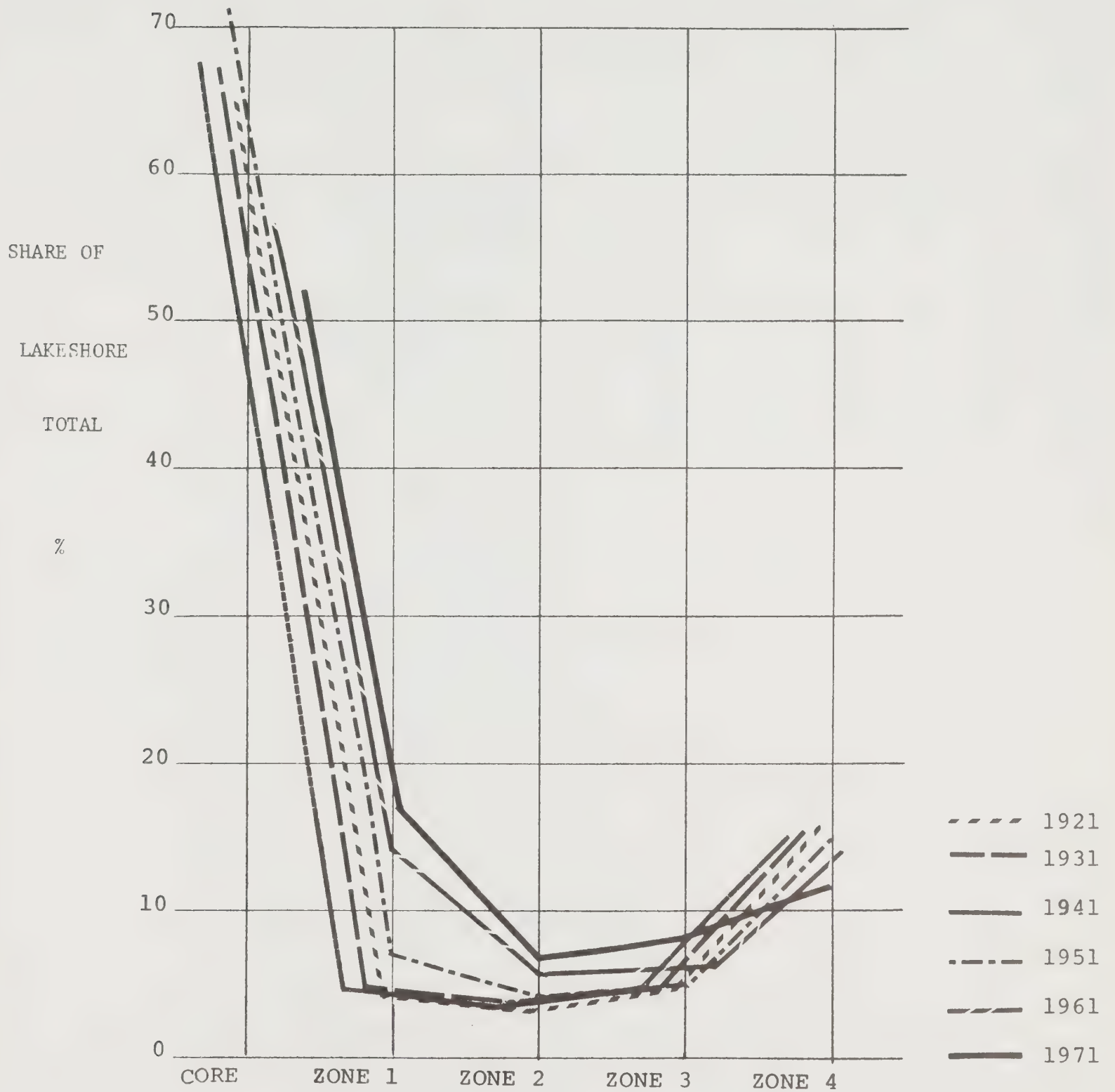Core

Zone 1

Zone 2

Zone 3

Zone 4

Scale
2 0 2 4 6 8

DISTRICTS FROM TARMS STUDY
MAY, 1972

FIGURE 14

BOUNDARIES OF ZONES USED
FOR FIGURE 13

METROPOLITAN TORONTO

OSHAWA-WHITBY

PICKERING-AJAX

MISSISSAUGA

OAKVILLE

BURLINGTON

HAMILTON

TABLE **5**

DATA FOR FIGURE **13**

URBAN ZONE

YEAR	KEY	CORE	Z	O	N	E	S
			1	2	3	4	
1921	╴╴╴╴╴	65.1	4.2	4.4	4.2	16.3	
1931	━━ ━━	67.2	4.1	3.6	4.5	15.8	
1941	▬▬▬▬	67.6	4.4	3.5	4.6	15.0	
1951	╴╴╴╴	63.9	7.1	4.1	4.9	14.9	
1961	━╱━	56.4	13.9	5.9	6.4	14.0	
1971	━━━━	52.3	17.7	5.9	7.3	11.9	

their shares of population. Large scale suburban and circum-
metropolitan residential development does not make itself felt on
the aggregate pattern until 1951. From this time on the infilling
process, especially between Toronto and Hamilton has gone apace.
It is interesting to note that Oakville provided a minor crest
of development between Toronto and Hamilton in 1921. This place
accounted for about 1.8% of the lakeshore's population in 1921.
With suburbanization, Oakville's relative position declined until
1951. By this time the only intermediate population peak was,
interestingly enough, in the Oshawa area (53,348)*. This
contrasts with the increasing homogeneity of the infilling
Mississauga-Oakville areas and the modest urban population to be
found in Burlington (14,210). Of late, the smaller circum-
metropolitan places (Markham-Unionville, Richmond Hill,
Streetsville, Bramalea and Maple) have grown at a fast rate
further filling the"troughs" between Toronto and intermediate
places such as Oakville.

THE LAKESHORE - METRO, EAST AND WEST - POPULATION 1921-71
The availability of data permits the plotting of the changing
distribution of population (by shares) along the lakeshore
(Figure 15).** The pattern is one of typical metropolitan
dominance, overspill and subsidiary centres. The extent of
concentration in the Toronto area has however, changed radically
over the fifty year period.*** In 1921, the City of Toronto

*Whitby, East Whitby and Oshawa

** The best constant data unit available is the Township. The
   vast majority of the population is concentrated in the lake-
   shore urban places. These were used throughout the 1921-71
   period. (See Figure 16.) Figure 17 illustrates the changing
   shares of various "urban zones" as growth curves for the
   period 1921-71.

*** The percentages for Toronto shown in Figure 15 include the
    city itself plus the boroughs of York and East York.
    (See Table 6.)

FIGURE 15

POPULATION SHARES IN THE

ONTARIO LAKESHORE CORRIDOR   (1921-71)
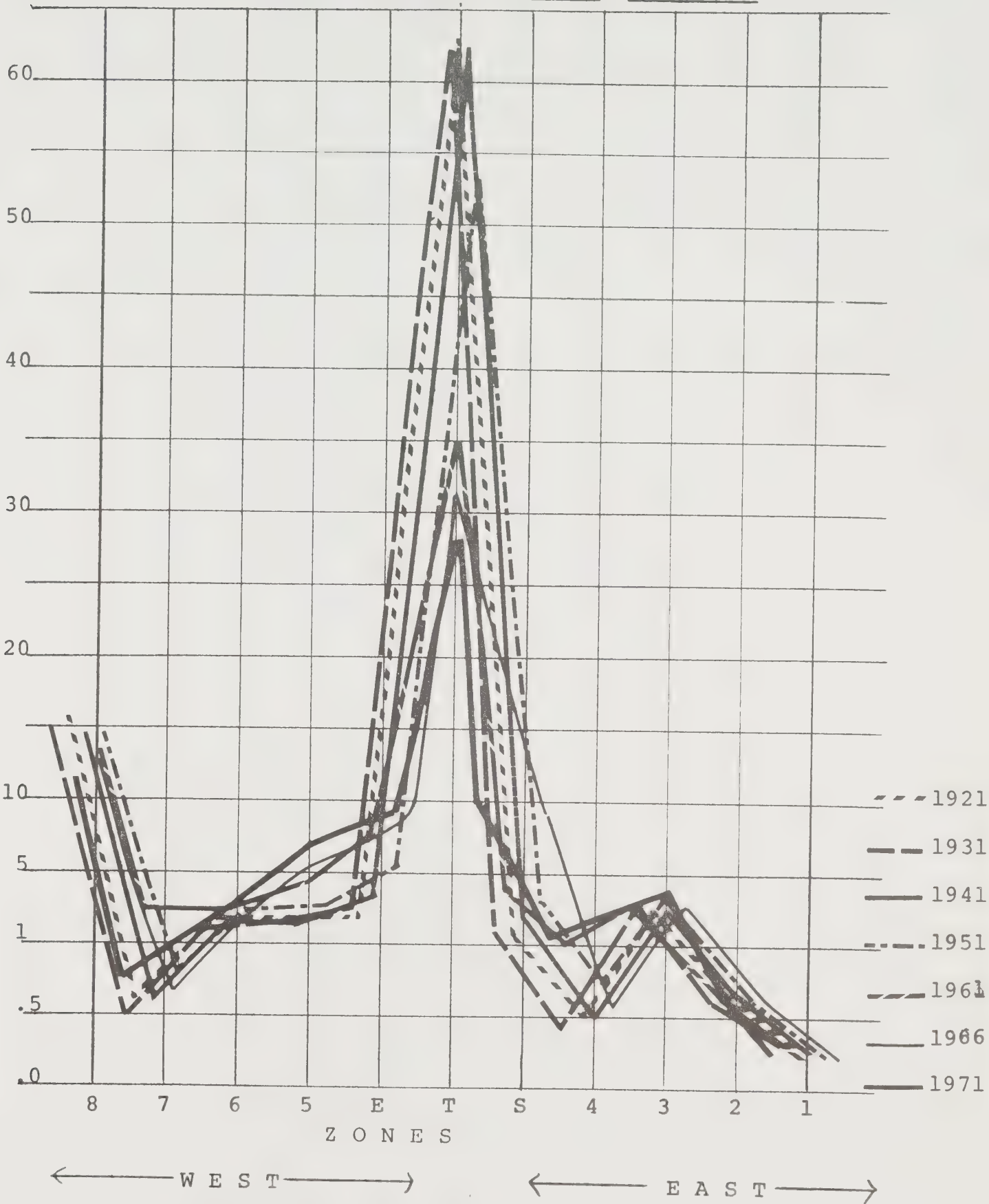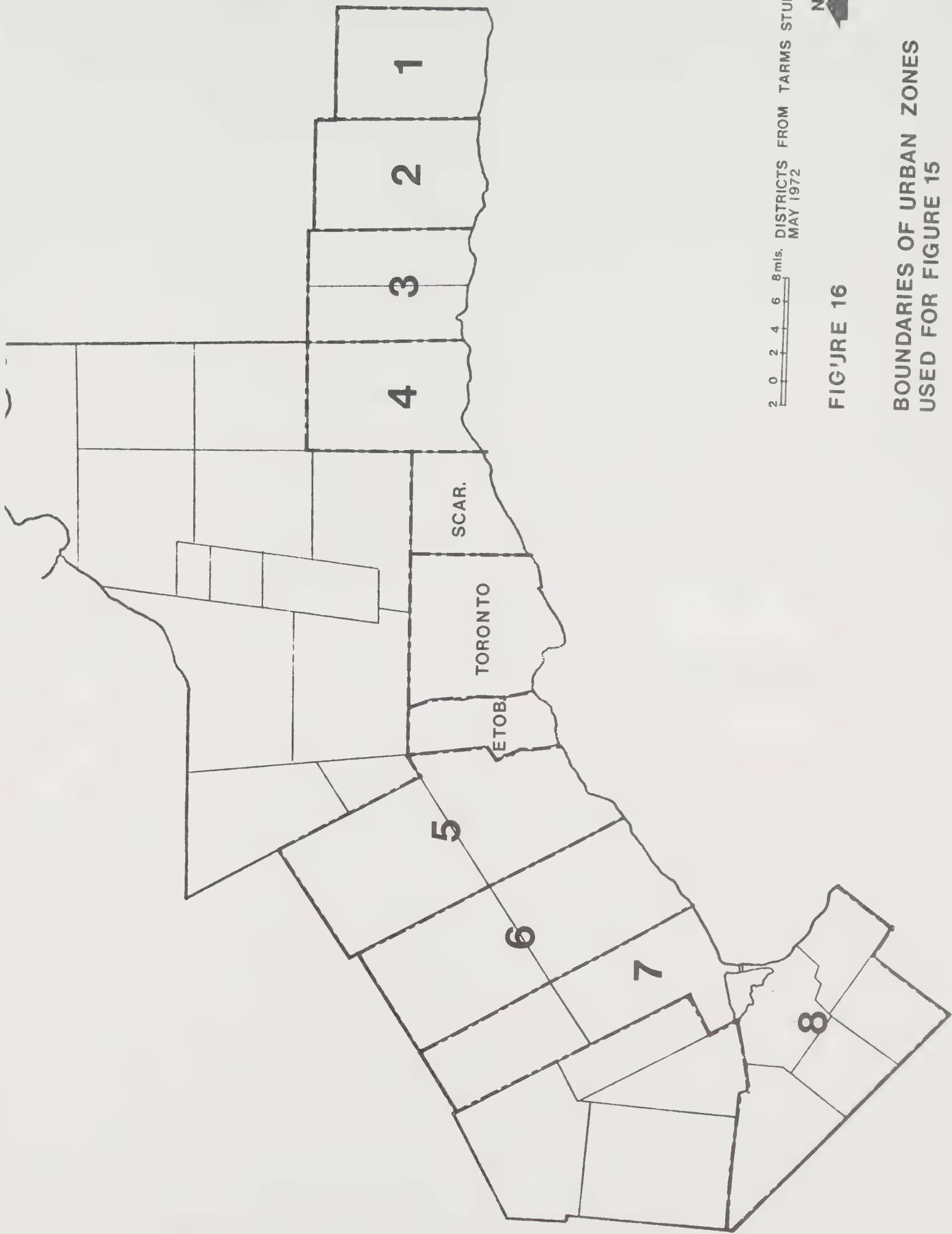
2 0 2 4 6 8mls. DISTRICTS FROM TARMS STUDY
MAY 1972

FIGURE 16

BOUNDARIES OF URBAN ZONES
USED FOR FIGURE 15

TABLE 6

DATA FOR FIGURE 15

URBAN ZONES

YEAR	Zone 8	7	6	5	E	T	S	4	3	2	1
1921	15.5	0.6	1.8	1.8	1.8	62.6	1.2	0.5	2.3	0.7	0.3
1931	15.0	0.5	1.4	1.8	2.6	62.9	1.7	0.4	3.0	0.6	0.3
1941	14.7	0.6	1.4	1.9	3.1	62.1	1.8	0.5	3.1	0.6	0.2
1951	14.8	0.8	1.6	2.8	5.1	53.0	3.3	0.6	3.2	0.6	0.2
1961	13.2	2.6	2.7	4.0	7.9	37.0	8.7	1.0	3.4	0.6	0.2
1966	12.3	2.2	2.8	5.4	9.0	31.4	9.4	1.3	3.6	0.6	0.2
1971	11.3	2.5	2.9	7.3	8.4	28.7	9.9	1.3	3.5	0.5	0.2

and adjoining boroughs accounted for no less than 62.6% of
the lakeshore population with the 1921-31 period representing
the peak of the City's dominance. This declined slowly to 62.1%
by 1941. The decline since the Second World War has been
dramatic, bringing this core area's share down by 33.4%.
The extent of change in Toronto's share has
not been reflected in any great alteration of the lakeshore
share "surface". The relative stability of peaks and troughs
is evident throughout the period, though an incremental levelling
or smoothing of the surface is also apparent. Hamilton's share
followed that of Toronto, declining slowly from around 15.5% in
1921 to about 14.7% in 1941. The decline after that was quite
rapid to 11.3% in 1971. In the Oshawa/Whitby area, the opposite
was the case. This area increased its share rapidly in the
early period 1921-31 and then at a moderate rate over the remaining
40 years. Only about an extra 0.6% of the lakeshore population
was gained, in what turned out as a rapid growth period. The
Oshawa area thus performed differently than the metropolitan
core and Hamilton. It gained rapidly in a period of modest
metropolitan growth and then unlike Hamilton, continued to
increase its share over the remaining decades. While Hamilton
is beyond the immediate overspill influence of Toronto it would
appear that the Oshawa area is being increasingly drawn into
the growth dynamics of the metropolitan population. Its earlier
growth marks a period of relative independence prior to
integration.

While Oshawa's share of the lakeshore population appears to have
been related to the growth of Toronto it has not been a straight-
forward or even strong relationship. As indicated in Figure 15
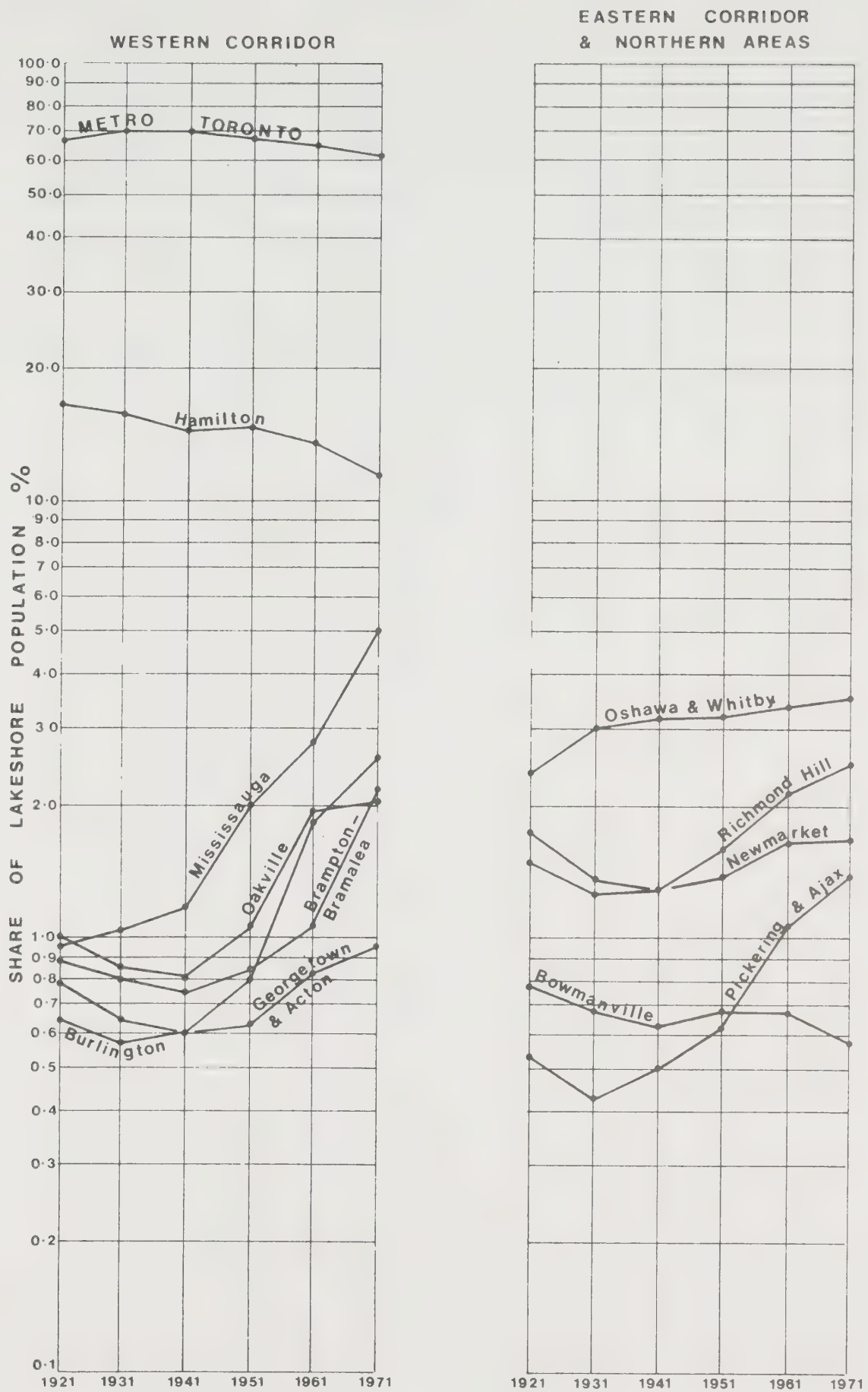
CHANGING LAKESHORE POPULATION SHARES 1921–1971

FIGURE 17

the declining dominance of Toronto has been accompanied by an accretion of suburban and overspill residential development in Etobicoke, Mississauga, Brampton-Bramalea, Scarborough and Pickering-Ajax.* The Metropolitan share decreased by only 4.0% over the time period whereas Toronto as defined in the study context declined in its share by 35.4%. This accounts for the relatively unchanged lakeshore share surface. While the pattern, with one exception to be detailed, is not highly asymmetrical, the western lakeshore has been the principal reception area for residential infill outside of Metro Toronto. From a relatively homogeneous distribution of population out to the Burlington area in 1921, the area increased in diversity up to 1951 with large scale suburban development in the Etobicoke-Toronto Township (Mississauga) areas. After this period the residential wave spread, encompassing the Burlington area. However, the 1951-'61 period was marked by yet another rapid rate of growth. The Burlington area reached its highest share level at the end of this period.

Since 1961, the rapid decline in the Toronto share has been reflected in the increasing share of intermediate areas, especially the Brampton-Bramalea and Mississauga areas. Here, the high growth of these areas in the 1961-71 period is marked by a "shoulder" on the Toronto peak. The Brampton-Bramalea area accounted for approximately 2.1% of the lakeshore population in 1971. Removing this portion of the Toronto-Guelph corridor from the lakeshore would change this "shoulder" into a steeper

---

*In Figure 15 the scale is exaggerated below the 1% level by 2.5 to permit visual inspection of minor share fluctuations in the "troughs".

FIGURE 18

THE NORTHERN CORRIDOR

POPULATION SHARES 1921-1971

SHARE OF CORRIDOR TOTAL %

URBAN ZONES ——— NORTH→

- - - - 1921
— — — 1931
——— 1941
—·—·— 1951
— — — 1961
▬▬▬ 1971
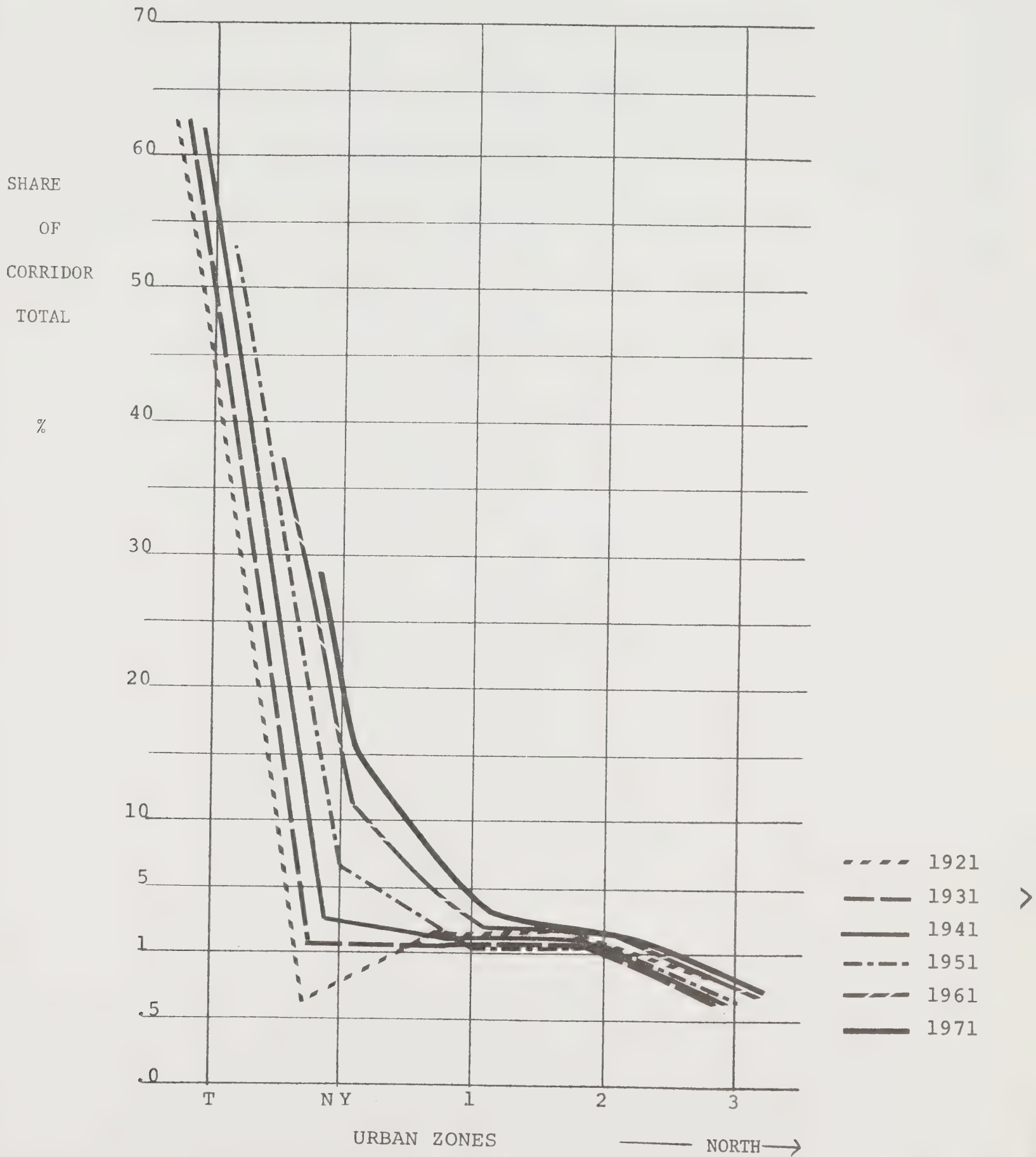
2 0 2 4 6 8 mls. DISTRICTS FROM TARMS STUDY
MAY 1972

FIGURE 19

BOUNDARIES OF URBAN ZONES
USED FOR FIGURE 18

TABLE 7

DATA FOR FIGURE 18

URBAN ZONE

	U R B A N Z O N E S				
YEAR	TORONTO	NORTH YORK	1	2	3
1921	62.6	0.6	1.4	1.7	0.8
1931	62.9	1.5	1.1	1.3	0.6
1941	62.1	2.1	1.2	1.2	0.6
1951	53.0	5.6	1.5	1.3	0.6
1961	37.0	11.2	2.1	1.6	0.7
1971	28.7	15.0	2.8	1.3	0.7

slope, reminiscent of the earlier patterns. The share would be depressed from approximately 7.3% to 5.2%. This vividly illustrates the cumulative effect of the twin-corridors and the development momentum in the western lakeshore.

Figure 18 depicts the share surface for the north corridor. The same overall pattern of population growth is observed in this area as in the lakeshore corridor. North York has experienced a dramatic increase in its residential shares, thus reinforcing the strong overspill residential development as evidenced in Scarborough and Etobicoke. Beyond the Metropolitan area, changes in the regional share surface over the fifty years are similar to changes observed in the Oshawa side of the lakeshore corridor.

SUMMARY

In summary, the general pattern observed of shifting regional population shares is one of dramatic decline in the City of Toronto (including East York and York) but a much less significant decline for the Metropolitan Area. The implication is that population is deconcentrating from Toronto but the spatial extent of this deconcentration process has been largely restricted to the boroughs. Nevertheless, an in-filling process is occuring in the western lakeshore which has been the main recipient for overspill and in-migrating population (excluding Metro). In contrast, the eastern lakeshore and to a slightly lesser degree the northern area, have remained relatively stable in their share surface.

Since the in-migration, intra-regional relocation and birth components of population change have not been identified, the relative importance of population overspill etc. in each urban

place cannot be assessed.

THE FUTURE

These share "surfaces" do not alone provide a basis for pro-
jections. It is however worthwhile to consider the general
possibilities or trends for the next 15-30 years. It can be
expected that with the continuing growth of Burlington, Oakville
and Georgetown the western lakeshore can continue to infill
toward a relatively homogeneous share "surface".
The prospects in the east could be the same, for different
reasons. The spatial extent of a major change in shares can be
seen in the 1951-'61 development of Scarborough. This growth
displaced the curve a considerable way eastwards. Since 1961
the infilling in the Pickering-Ajax "trough" has been marginal.
Further major growth in Scarborough or North Pickering will
continue to infill the "surface" toward the Oshawa-Whitby peak.
Even with the possibility of accelerated growth in Oshawa the
relative proximity of this area to the Toronto-Scarborough-
North Pickering peak, will mean that the infilling in
Scarborough and the growth of the entire Pickering-Ajax-North
Pickering Sector, will ensure an increasing homogeneity of the
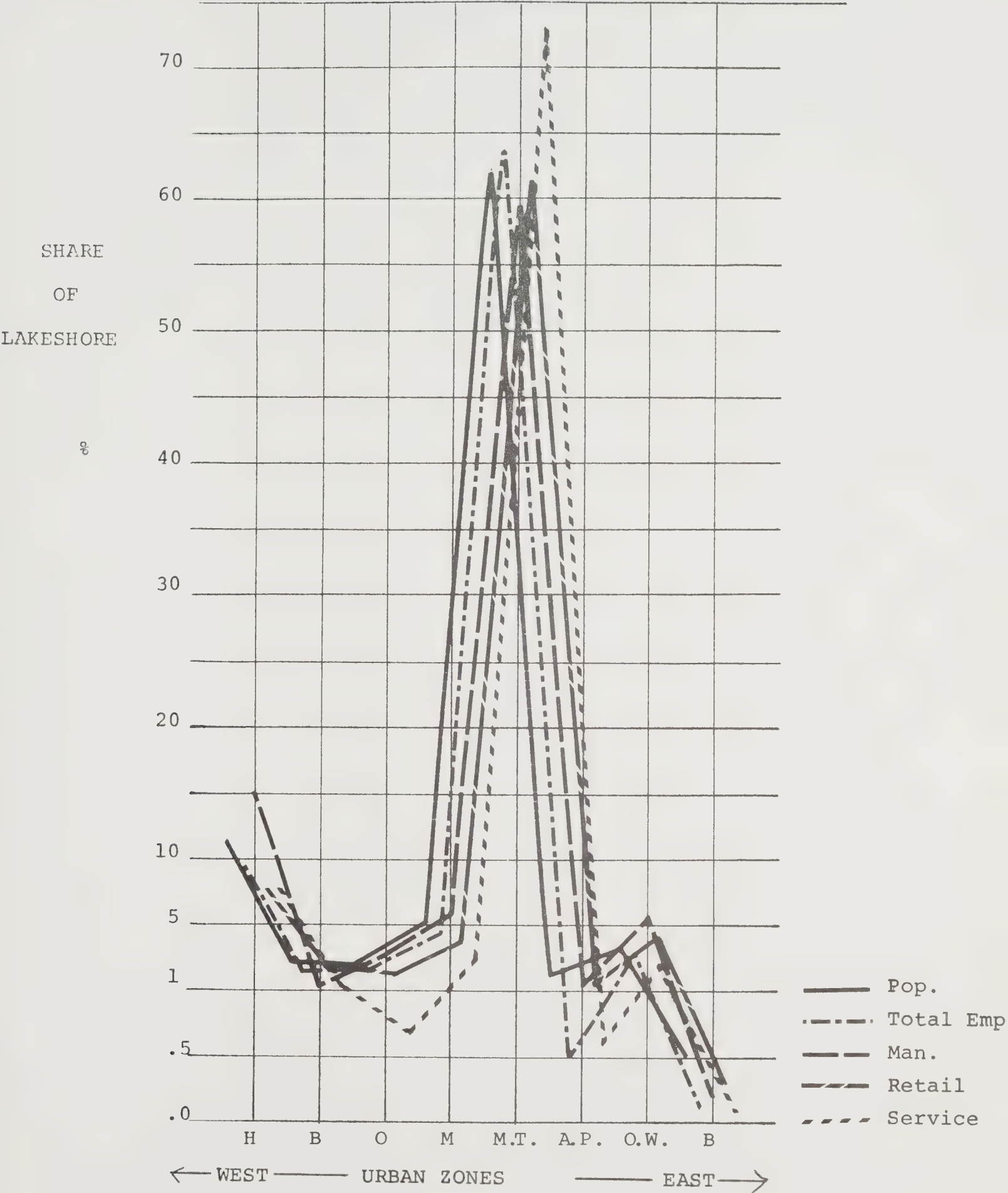share "surface" in the eastern lakeshore.

THE LAKESHORE: AGGREGATE EMPLOYMENT SHARES (1971)

The general pattern of employment distribution along the lakeshore is one of a few major manufacturing poles and one service core (Figure 20). The pattern is also characterized by Metropolitan Toronto as the dominating job "sink". Hamilton's population share is in excess of its local job provision while Oshawa/Whitby's shares match. The well-known dormitory functions of Burlington and Oakville are manifested by considerable discrepencies between residents and employment opportunities. The Mississauga and suburban areas display relatively minor differences between population and job shares. There is however, a considerable gap in the Pickering-Ajax area.

In terms of manufacturing employment the Hamilton and Oshawa/ Whitby areas have manufacturing shares considerably in excess of both their population and employment shares. There is a general matching of manufacturing and population shares in the suburban areas, i.e. east of Hamilton, Ajax and Metro's suburbs. In the western lakeshore there are two intermediate concentrations of manufacturing employment, i.e. Oakville and the Mississauga areas. Thus outside of the Burlington area the western lakeshore is a fairly continuous manufacturing sector. In only the Burlington area does the share of manufacturing employment dip below the share of total employment.

Typically, retail employment reflects the general distribution of population. Hamilton is a notable exception being relatively deficient in its share of retail activities. Service employment, while generally below the population shares, reflects the same distribution. In Metropolitan Toronto (specifically, the City), the presence of higher-order and lakeshore-serving activities is evidenced by a considerable surplus in its service employment

FIGURE 20
LAKESHORE POPULATION
AND EMPLOYMENT PROFILE
- 1971 -

Note: For Zones see Table 8.

TABLE 8

DATA FOR FIGURE 20

	Hamil- ton	Burl- ington	Oakville	Missi- ssauga	Metro Toronto	Pickering/ Ajax	Oshawa/ Whitby	Bowman- ville
POPULATION	11.1	2.6	2.0	5.1	62.3	1.2	3.4	0.5
TOTAL EMPLOYMENT	9.5	1.4	1.5	4.5	64.0	0.5	3.0	0.1
MANUFACTUR-ING EMPLOY-MENT	15.2	1.2	3.0	6.0	59.4	1.1	5.9	0.2
RETAIL EMPLOYMENT	7.8	2.5	1.8	4.3	61.4	1.0	3.4	0.3
SERVICE EMPLOYMENT	7.4	1.1	0.7	3.6	73.0	0.6	2.1	0.1

URBAN ZONE

share. Thus the lakeshore service employment "surface" is one
of considerable polarity, outside of local or convenience personal
services.

SOME INTERPRETATIONS

Placing North Pickering within these "surfaces" suggests the
following:

  i)   The deficiency in manufacturing shares in the
       Pickering-Ajax area is atypical, the result of
       a complex of factors from servicing ability to,
       perhaps "economic shadow" effects. Other data
       however, indicates that recently there has been a
       considerable migration of activities to these
       areas. There can be little doubt that the area
       to the immediate east of Metro will increase its
       share of manufacturing employment. North Pickering
       will be a part of this competitive area.

  ii) While Burlington also appears peculiarly
       deficient in jobs and in manufacturing employment,
       it is doubtful that this place is a strong
       competitor with North Pickering for new or
       migrating enterprises. Activities which will
       look to North Pickering will, in the first instance,
       tend to be those looking for a relatively immediate
       metropolitan location within the lakeshore.

  iii) The mis-match between jobs and population in the
       western lakeshore (especially Oakville) could act
       as a distractor for enterprises which might otherwise
       look to North Pickering. This might be aggravated

further by sizeable population increments through
such activities as the OHAP programme. It could
be especially serious if "city centre" type
developments in Mississauga, Oakville, North
Oakville and Brampton-Bramalea siphon-off some of
the service activities moving out of Toronto. It
is to be noted that Scarborough currently has a
considerable deficit in job provision. While it
is forecasted that a labour force/jobs gap will
continue in this part of Metro, Borough policy
could actively seek to reduce this. Scarborough
could, for a period, act as an intervening
opportunity, constraining somewhat North Pickering's
prospects.

ACTIVITY RATES

The different shares of population and employment along the
lakeshore may be examined in terms of the activity rates* for the
various urban municipalities (See Fig.21 & Table 9). The variation is
considerable, ranging from Pickering's 12.5% to the City of
Toronto's 65.8% or Georgetown's 21.25% to the Town of Vaughan's
91.5%. The range reflects the dominant functions of the
lakeshore's diverse urban places. Brampton and Bramalea's high
concentration of manufacturing employment** compares with the
City of Toronto's extensive financial, management and

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* The activity rate used here expresses the number of persons
  employed in a place as a percentage of the resident population.

** The T.A.R.M.S. estimated that nearly two-thirds of Brampton-
  Bramalea's employment was in manufacturing, wholesale and
  construction in 1971.

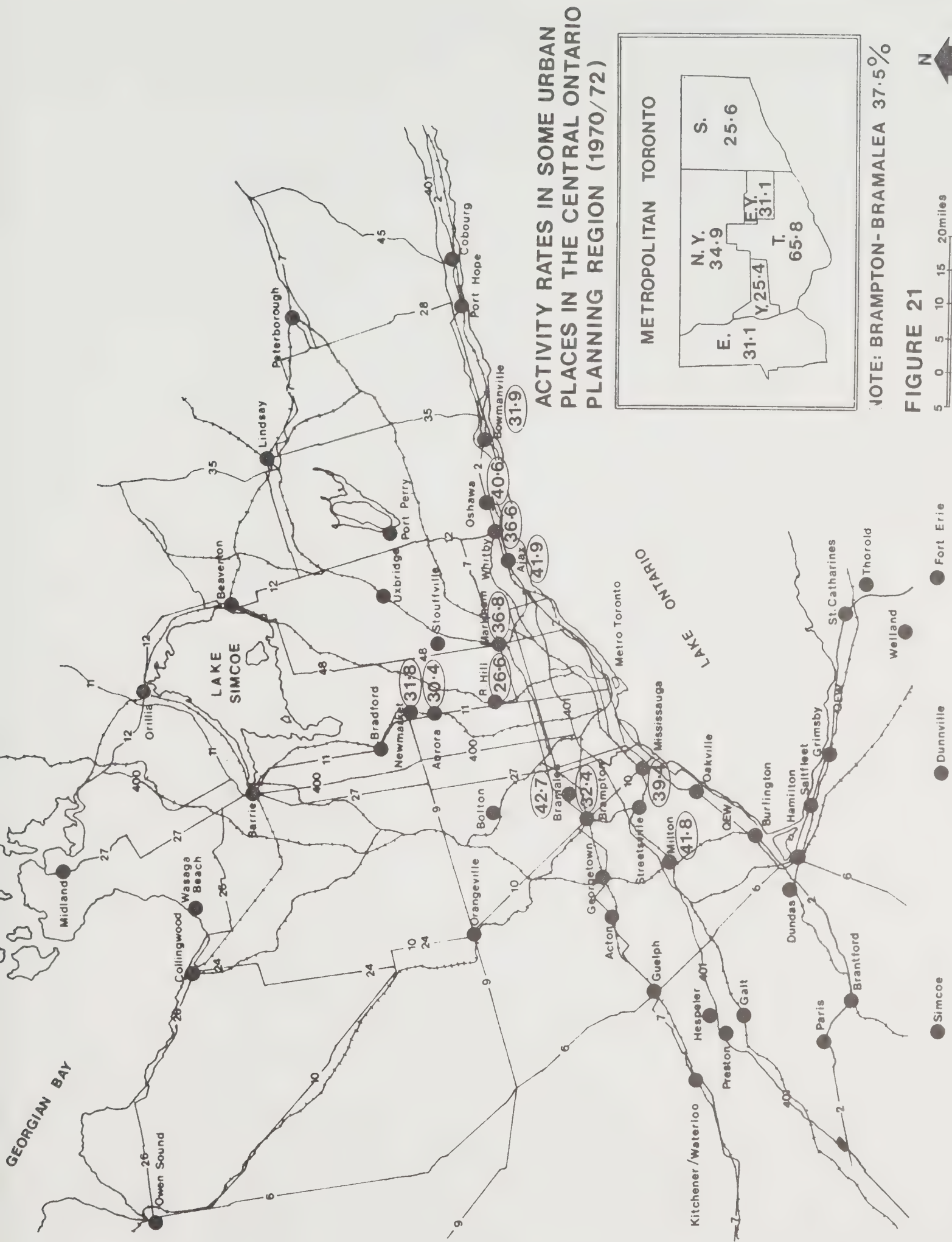ACTIVITY RATES IN SOME URBAN
PLACES IN THE CENTRAL ONTARIO
PLANNING REGION (1970/72)

NOTE: BRAMPTON-BRAMALEA 37·5%

FIGURE 21

METROPOLITAN TORONTO

	N.Y. 34.9		S. 25.6
E. 31.1	Y. 25.4	E.Y. 31.1	
		T. 65.8	

5 0 5 10 15 20miles

N

TABLE 9

POPULATION, EMPLOYMENT AND THE ACTIVITY
RATE FOR AREAS ALONG THE LAKESHORE
(1970/72)

	Population	Total Employment	Activity Rate %
Bowmanville	8,947	2,862	31.9
Darlington Twp.	10,768	1,164	10.8
Oshawa	91,587	37,233	40.6
Whitby	25,324	9,290	36.6
East Whitby	3,407	520	15.2
Ajax	12,515	5,253	41.9
Pickering	2,537	370	14.5
Pickering Twp.	31,734	3,340	10.5
Uxbridge	3,077	149	4.8
Uxbridge Twp.	3,868	1,179	30.4
Whitchurch/Stouffville	11,262	2,026	17.9
Markham	36,684	13,528	36.8
Vaughan	15,873	14,529	91.5
King Twp.	12,864	1,305	10.1
Newmarket	18,941	6,033	31.8
Aurora	13,614	4,140	30.4
Richmond Hill	32,384	8,622	26.6
Albion Twp.	4,711	163	3.4
Toronto Gore Twp.	1,362	70	5.1
Bolton	2,984	382	12.8
Caledon East	910	74	8.1
Brampton	41,211	13,388	32.4
Bramalea	23,555	10,061	42.7
Chinguacousy Twp.	7,442	55	0.7
Mississauga	156,070	61,620	39.4
Streetsville	6,840	1,404	20.5
Port Credit	9,442	735	7.8
Oakville	61,483	17,199	27.9
Milton	7,018	2,935	41.8
Georgetown	17,053	3,624	21.2
Acton	5,031	2,200	43.7
Esquesing Twp.	9,416	620	6.5
Burlington	87,023	21,138	24.2
Hamilton	309,173	123,685	40.0
Saltfleet Twp.	18,993	5,485	28.8
Dundas	17,208	N/A	-
Metro Toronto	2,086,017	980,000	46.9
Toronto	712,786	469,300	65.8
York	147,301	37,500	25.4
East York	104,784	32,600	31.1
North York	504,150	176,200	34.9
Scarborough	334,310	85,600	25.6
Etobicoke	282,686	119,500	42.2

administrative functions. The presence of the Concorde Yards (CNR) in Vaughan and a small resident population base is manifest in this area's high activity rate. The large dormitory element in some of the Metropolitan boroughs (e.g. Scarborough, York) and peripheral places (e.g. Markham-Unionville area, Richmond Hill) is immediately evident.

THE FUTURE

The activity rate map is a useful summary of the spatial distribution of employment opportunities, relative to population. (Fig.21) It provides a shorthand description of the employment concentrations which compete with each other for the lakeshore's labour force. What will the activity rate for the lakeshore be in 1986? What will it be for the metropolitan area? What will the spatial distribution look like by this time? What are the possibilities for North Pickering, especially without an airport?

The activity rate for the lakeshore could increase from the 1971 level of 43.0% to 50% by 1986.* The Metropolitan Toronto area, as the major "job sink" in the province, could have a higher rate of 52%. There are a number of factors which will influence the activity rates of the circum-metropolitan places in the future, the context within which North Pickering will compete.

1.   The increasing out-movement of people from Metro Toronto
      to Ajax, Markham, Mississauga and other places.

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*   As indicated in one of the background reports on population and employment for the Central Ontario Lakeshore Urban Complex Task Force (1973-74). The Task Force used a level of 46% for the lakeshore (1986). However, the "Ontario Economic Review" (Sept.-Oct.'72) contained Provincial forecasts of 46.6% for the whole of Ontario for 1981. It is highly likely that the urbanized lakeshore will exceed this at this time and easily reach 50% five years later.

2. In addition to the above, the displacement of people from Toronto as a result of the land use conversion process i.e. old residential to offices and related uses.

3. The continuing in-migration of people to the general metropolitan area.

4. The tendency to propel dormitory development with demand-induced transportation (commuter) services.

5. The opening-up of serviced residential land in reaction to the O.H.A.P. and trunk water and sewage schemes.

These five factors will cumulatively tend to reduce the activity rates of places peripheral to the metropolitan area. There are forces at work which would tend to work in the opposite direction.

1. The continuing out-migration of manufacturing and distribution industries from the metropolitan area.

2. The continuing in-migration of manufacturing and distribution industries to the general metropolitan area.

3. The possibility of substantial increases in serviced-land availability to relieve the high costs and shortages in Metropolitan Toronto.

4. The possibility of a major international airport in Pickering.

How these forces will resolve themselves in altering the activity rates around Metro cannot be definitely determined from this review. There can be little doubt however, that the concentration of employment opportunities in a limited number of nodes in the general metropolitan area will affect the volume of employment opportunities in North Pickering. The *relativity of activity rates* in this general area will therefore influence North Pickering's objective of a "live/work" town.

For the moment, various approaches to estimating North Pickering's likely (i.e. market-induced) activity rates can be set out. These provide a range of possible employment volumes to match the range of sectoral splits already generated from the regional perspective.

NORTH PICKERING - THE POSSIBILITIES

There are at least five overlapping approaches to estimating the possible activity rate in North Pickering, without an airport. All are variations on the theme of modifying regional patterns by metropolitan urban economic characteristics.

1.   The first approach might be called a "components" approach. This involves an assessment of the prospects of individual sectoral activity rate for manufacturing, retail, wholesale and construction and service employment from the regional level, in North Pickering's metropolitan setting.

2.   The second approach involves an assessment of the current total activity rates in the circum-metropolitan area with a view to determining reliable analogies among the array of peripheral urban places.

3.   The third approach simply selects a small number of analogous places and uses these as a basis for establishing an activity rate range (possibilities) for North Pickering.

4.   The fourth approach relates all circum-metropolitan places current activity rates to that of the metropolis, with a view again of assessing the probable relationship of North Pickering in this regard.

5.   The final approach relates all urban places currently

on the metropolitan periphery, to each other and
especially to the major employment poles in the general
metropolitan area, e.g. the Toronto downtown, Etobicoke,
Mississauga/Airport.

In suggesting a possible activity rate range for North Pickering
in 1986 it will suffice to combine the essentials of all of
these approaches, with the exception of the last-mentioned.
This one would generate more activity rate comparisons than can
be handled without a formal model, and involves comparisons
which would better be pursued with more refined data, including
time series.

Following the generation of various employment rates for a large
number of the Central Ontario Region's urban places (Fig.12) it is
evident that North Pickering at around 90,000 population could have

   i)   an Em/P of 19.0 - 20.0%

  ii)   an Er/P of 4.0 - 5.0%

 iii)   an Ec+w/P of around 10.0%, and

  iv)   an Es/P of 10.0 - 15.0%

This suggests an activity rate of 43.0 - 50.0%. This is
undoubtedly high even though it is inflated by the high
construction activity rate inevitably associated with very
high volumes of construction in housing, roads, sewers, city
centre and other new town developments. While the regional
rates do include those circum-metropolitan places with low
levels of service employment, it is very possible that North
Pickering's rate could be in the lower part of the range. All
of this indicates a level possibly around 45%, from this
viewpoint.

Scrutinizing the current activity rates of places on the metro-
politan periphery and along the lakeshore suggests some guidelines
for North Pickering (Table 9). Some places, e.g. Oshawa,
Vaughan, Richmond Hill, Milton, Scarborough, East York and the
City of Toronto can be dismissed as unlikely analogies. The reasons
range from very high dormitory populations, the regional core
(Toronto), large institutional sectors (Milton) and other
factors. The Town of Markham (36.8%) with considerable new
residential development and increasing industrial expansion is
not an unlikely analogy. This is supported by similar
locational and access characteristics. North York (34.9%)is an
area in Toronto undergoing increasing maturity in the wake of
rapid suburban development and growth of manufacturing/distri-
bution industries. The likely growth of population and
manufacturing employment in parallel, in North Pickering,
indicates some analogies.*

Bramalea (42.7%) is an area where the growth of residential
development and manufacturing industry was purposefully
synchronized. The degree to which this might happen in North
Pickering under *market conditions*, is uncertain. It is however,
likely that the pent-up demand for housing and the political
weight which shelter is inevitably accorded, would lead to a
certain lag in the rate of industrial expansion. The Bramalea
analogy must therefore be tempered somewhat.

Brampton's large manufacturing industry base makes it a useful
benchmark (32.4%). As Brampton and Bramalea share many retail
and other services, draw upon the same labour market and have
similar access characteristics vis a vis Toronto they are often

_____
* But not necessarily, entirely similtaneously

better treated an an urban complex. Together they have an
activity rate in the order of 36.5%. Ajax (41.9%)is somewhat
analogous because of locational characteristics and the
concentration of manufacturing activities in the area. The low
population level suggests that the area is in considerable
disequilibrium and that a lower activity rate may be expected
with on-going residential expansion. The Mississauga/Airport
area (39.5%) is an obvious analogy. Here the mixture of high
access, sizeable dormitory population, diverse manufacturing/
distribution industries base and very rapid development suggests
some possible similarities. However, the principal concern here
is with North Pickering's activity *without* an airport. Not-
withstanding considerable data problems the Mississauga rate,
without Malton Airport, was estimated at 24.1% in 1971*. Even
if this understates the employment position by several percentage
points, this dynamic area does suggest a modest rate not above
30% for North Pickering.

Drawing these analogies together we have a range of possible
activity rates from around 30.0% to 42.7%. There are factors
which can contract this range. The presence of a city centre
and managed industrial parks should raise North Pickering's
prospects from the Mississauga analogy of 30%. However, the
industrial lag referred to above, could serve to reduce the
Bramalea comparison down from the high 42.7%. The more
reliable analogies like Brampton-Bramalea and North York all
suggest a middle area, e.g. 35.0 - 38.0%.

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*T.A.R.M.S.

However, the activity rate will likely increase over the 1971-
'86/91 period. It has been suggested previously (Page 28) that
the lakeshore and Metro rates could be 50% and 52% respectively,
by 1986. Also, a series of factors have been ennumerated which
will tend to influence the activity rates in places on the
metropolitan periphery. It is felt then that the outcome of
these will be to keep down the activity rates of the peripheral
urban places. This is especially true for two important reasons:

1. Under *market conditions* the manufacturing sector
   will continue as a stagnant or declining employ-
   ment-growth industry. While the locational shifts
   to the periphery will effectively mean employment
   "growth" for these areas, the dual components of
   sectoral and locational growth, evident in the
   1950 - 60's, will not be present. The present
   peripheral areas which in the past, have been the
   beneficiaries of actual expanding activities, must
   be tempered by the facts of sectoral employment
   stagnation today.

2. The major increase in economic activity in the
   metropolitan area will continue to be in high
   growth industries, i.e. services. These
   employment-intensive activities will tend to
   raise the metropolitan activity rate higher and
   draw upon an extensive dormitory labour force along
   the periphery. It is widely felt that the lag
   between peripheral residential development and
   the out-migration of substantial office-based
   activities can extend over several decades.

These two overriding trends, combined with the related factors
mentioned previously, all suggest a reduction in the activity
rates of peripheral places, *at least relative to the*
metropolitan rate. This, notwithstanding the general increase
in the overall rate, effectively leads to the final approach
toward assessing prospective activity rate ranges for the new
town. This may be called the "relative activity rate" approach,
i.e. the peripheral place's rate relative to the metropolitan
area's rate.

There are additional reasons in support of this approach. As
mentioned earlier, functionally North Pickering will interact
and compete in a metropolitan area characterized by a limited
number of employment poles. These "job sinks" will influence
the level of job provision in contiguous and more distant places
while also affecting the location of residential expansion. In
short, the rate of employment growth in Toronto proper, North
York, Mississauga, Etobicoke and to a lesser extent, Ajax and
Scarborough in the next 10 - 15 years, will directly affect the
activity rate of North Pickering. The activity rate of
peripheral places should therefore be viewed in a *relative*
manner. For convenience, the heterogeneous employment oppor-
tunities in Metropolitan Toronto have been aggregated (or averaged)
and its overall activity rate used. The question now is, "given
the present relationships between peripheral places and the
metropolitan activity rate, and given the factors influencing
peripheral rates in the forseeable future, what does this
suggest for North Pickering?"

The discussion so far suggests a reduction in the peripheral rates relative to the metropolitan rate. The present relationships are characterized by considerable variation (Table 10). However, if the better analogies indicated previously are used, the following relationships emerge:

Urban Place	Activity Rate %	Activity Rate Metro Activity Rate %
Mississauga *	30.0	63.8
Brampton	32.4	68.9
Brampton-Bramalea	36.5	77.7
North York	34.9	74.4
Metro	47.0	

1971 (for North York row and table group)

*Without Malton Airport and with the rate nominally compensated for data problems.

Rounding the activity rate proportions a range of 64% to 78% of the Metro rate is suggested. On the basis of the previous argument, how much will the relative rates of the peripheral areas have declined by 1986? A rough estimate might be that the relative rates would decline in the same proportion as the metropolitan rate might increase in the 1971-'86 period, i.e. by 10.6%. This gives the following proportions for the places cited.

Urban Place	Adjusted Activity Rate Metro Activity Rate %
Mississauga	57.2
Brampton	61.7
Brampton-Bramalea	69.7
North York	66.2
Metro	100.0

1986 (for table group)

TABLE 10

THE RELATIVITY OF SELECTED
URBAN PLACES ACTIVITY RATES
TO THAT OF METROPOLITAN TORONTO
(1970/72)

Urban Place	Activity Rate %	As a Proportion of Metro Rate %
Oshawa	40.6	86.5
Whitby	36.6	78.0
Ajax	41.9	89.3
Pickering	14.5	30.9
Uxbridge Twp.	30.4	64.8
Markham Town	36.8	78.4
Vaughan Town	91.5	195.0
Newmarket	31.8	67.8
Aurora	30.4	64.8
Richmond Hill	26.6	56.7
Brampton	32.4	69.0
Bramalea	42.7	91.0
Brampton/Bramalea	36.5	77.8
Mississauga	39.4	84.0
Oakville	27.9	59.4
Georgetown	21.2	45.2
North York	34.9	74.4
Scarborough	25.6	54.5
Etobicoke	42.2	89.9
Metro Toronto	46.9	100.0

Translating these reduced relative rates back into individual
urban place activity rates gives the following:

URBAN PLACE	POSSIBLE ACTIVITY RATE %
Mississauga	29.7
Brampton	32.1
1986 Brampton-Bramalea	36.2
North York	34.4
Metro	52.0

The activity rate possibilities for North Pickering are now
30% to 36%. These represent a considerable reduction in
employment prospects suggested by the broader, regional
perspectives. Figure 22 translates the sectoral split
possibilities generated from the regional perspective into
employment possibilities on the basis of the 30 - 36% activity
rate range.

SECTORAL EMPLOYMENT CHANGE: Some General Observations

Table 11 demonstrates employment distributions, expressed as a
percentage of total urban employment (industrial composite)
by selected sectors for four lakeshore urban areas, for various
years between 1966 and 1971. For all four areas, manufacturing
employment has decreased in its percentage share of local
employment. Except for Brampton, manufacturing employment has
also experienced absolute decline.

The largest increase in employment shares for Toronto is found
in the trade, particularly in retail, finance, insurance and
real estate, business and miscellaneous services and transportation,
communication and other utilities sectors. Trade also increased
in Hamilton and Oshawa as did services, and finance, insurance
and real estate in Hamilton. Column 5 in Table 11 shows the

25.2%

10.0% 3240

17.1% 5450

47.7% 15450
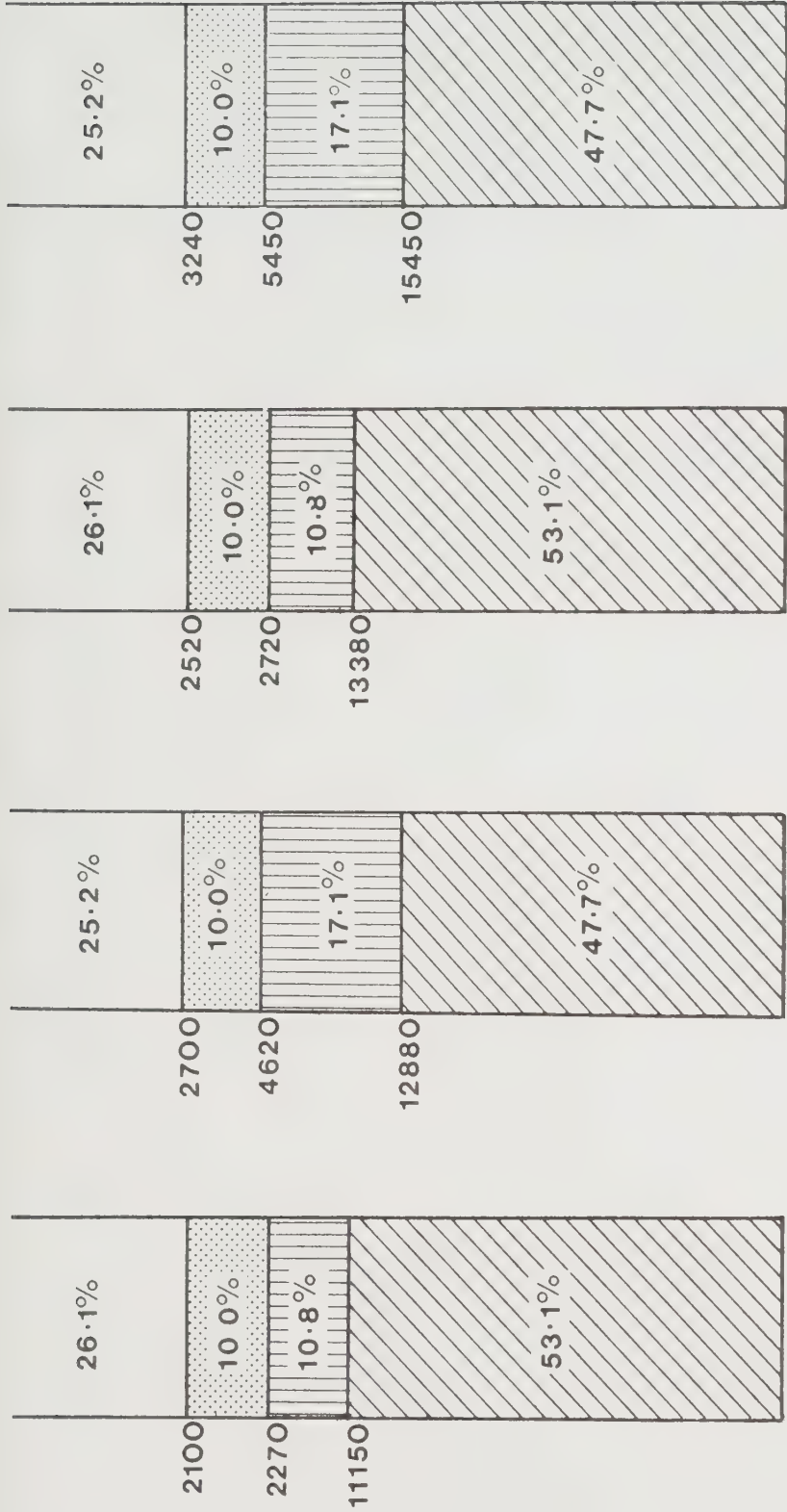
ACTIVITY RATE – 36%
EMPLOYMENT 25,200–32,400

26.1%

10.0% 2520

10.8% 2720

53.1% 13380

POPULATION – 70·90,000

25.2%

10.0% 2700

17.1% 4620

47.7% 12880

ACTIVITY RATE – 30%
EMPLOYMENT 21,000–27,000

26.1%

10.0% 2100

10.8% 2270

53.1% 11150

% of total employment in Service

30·0% 15000

10·0% 5000

10·0% 5000

50·0% 25000

Numbers Employed
(rounded)
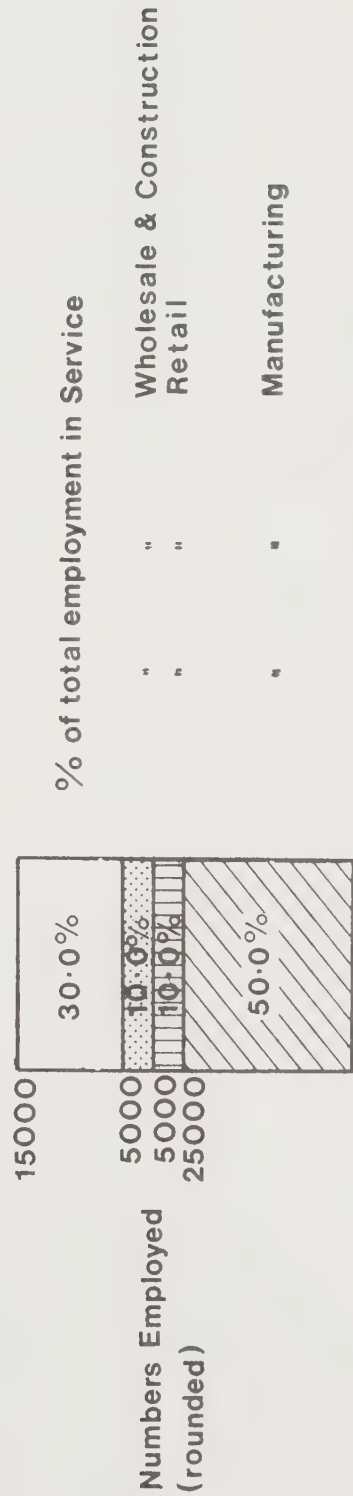
" " Wholesale & Construction

" " Retail

" " Manufacturing

EMPLOYMENT VOLUME &
4 PROFILE POSSIBILITIES
FOR NORTH PICKERING
(1986/91)

FIGURE 22

Note: These profile possibilities are derived from regional urban
employment patterns and lakeshore-metropolitan activity rate
patterns. As mentioned in the text, in the case of North
Pickering the manufacturing sector could be somewhat larger and
the service sector smaller.

TABLE 11

STRUCTURAL CHANGES IN THE URBAN ECONOMIES
IN FOUR MAJOR AREAS IN THE LAKESHORE
1966 - 1971

	1971 % EMPLOYMENT	1970 % EMPLOYMENT	1968 % EMPLOYMENT	1966 % EMPLOYMENT	GROWTH 1966 - 1971 %	% OF TOTAL EMPLOYMENT CHANGES
TORONTO						
Manufacturing	41.7	42.8	45.2	47.3	-0.7	-2.6
Construction	5.6	5.8	5.9	5.7	11.0	4.9
(Transportation, Communication, Utilities.)	10.4	10.2	9.4	9.2	28.0	20.2
Trade	19.8	19.5	19.0	18.9	18.2	27.0
Wholesale	7.2	7.4	7.1	7.0	15.2	8.4
Retail	12.6	12.1	11.9	11.7	21.4	19.7
Finance (Insurance & Real Estate)	9.8	9.6	9.3	8.5	30.6	20.4
Service	12.5	11.9	11.0	10.2	38.1	30.4
Business	4.2	3.8	3.6	3.3	44.2	11.6
Personal	4.5	4.4	4.6	4.4	15.2	5.2
Miscellaneous	2.2	2.2	1.9	1.6	60.5	7.5
Industrial Composite	100.00	100.00	100.00	100.00	12.7	100.00
HAMILTON						
Manufacturing	59.9	61.3	63.6	65.5	-7.8	-731.0
Construction	5.0	4.5	4.4	4.9	-2.1	
(Transportation, Communication, Utilities.)	6.8	6.8	6.6	6.7	11.5	14.4
Trade	16.3	16.3	16.1	14.8	11.4	240.2
Finance (Insurance & Real Estate)	4.1	3.9	3.3	2.9	45.8	187.7
Service	7.6	6.8	5.8	5.1	49.8	365.9
Industrial Composite	100.00	100.00	100.00	100.00	0.7	
OSHAWA						
Manufacturing	71.9	74.0	76.7	79.3	-18.5	
Trade	13.2	11.5	10.4	10.0	17.8	
Industrial Composite	100.00	100.00	100.00	100.00	-10.2	
BRAMPTON						
Manufacturing	70.9	73.7	76.5	77.8	23.7	51.6
Industrial Composite					35.7	

NOTES: 12 month averages usually used.

Toronto)
Hamilton)- CMA's

Oshawa - MUA

percentage growth by sector and indicates that in Toronto all
sectors, except manufacturing, increased in employment with
miscellaneous and personal services, transportation, communication
and other utilities and retail trade exhibiting the greatest
increase. When compared to column 6 which shows each sector's share
in the total industrial composite increase from 1966 to 1971,
the service sector accounted for approximately 1/3 of the
increase in employment with trade, transportation and finance
also representing major contributors.

Transportation experienced a smaller increase in Hamilton than
in Toronto. However, services, finance and trade displayed
similar trends. Hamilton offers an interesting situation in
that over the five year period its employment level has remained
relatively stable (increase of only 0.7% in total employment)
but the city's internal economic structure has shifted con-
siderably as Table 11 shows. The structural change in Hamilton
is further evidenced in the shift toward service activities.
With only minor growth in total employment, Hamilton's service
sector grew by some 49.8%. This brought this sector to 7.6%
of total employment in 1971, comparing with Toronto's 12.5%.
The bias in the Statistics Canada survey design in this area
works in the opposite direction to that of the manufacturing
survey, probably understating the presence and growth of the
service sector because of the predominance of small operations.
Toronto having more head offices (i.e. larger establishments) and
a more diverse service base is more than likely better
represented in the data. Notwithstanding this, Hamilton's
economy shows signs of maturing toward a more modern metro-
politan profile.

Even though the Statistics Canada survey on which Table 11

is based covers only the larger manufacturing establishments

(those with 20 employees and more), the structural difference

between the Toronto CMA and the Hamilton CMA is very evident.

Hamilton has a very high proportion of its manufacturing

employment in large firms having on an average nearly three

times as many employees per establishment as Toronto*. The

opposite is the case for manufacturing in Toronto. The effect of

firm size in the Oshawa area further biases official reports

on its economic structure toward manufacturing (reported as

71.9% of total employment). Trade also increased significantly

in Oshawa. The increasing importance of trade in local employ-

ment is emphasized in this case since over the five year period

employment in trade increased 17.8% despite the fact that

overall, Oshawa experienced a loss in its industrial composite

employment.

It should be emphasized, once again, that the above comments

are based on large firms data and therefore should not be

considered as comprehensive growth trends outside of this

restricted sample survey. Nevertheless, the data does offer

some insight into how well-known sectoral shifts in the modern

urban economy are working themselves out in the lakeshore area.

Manufacturing Employment Shares: 1964 - 1971

Through an investigation of Table 12 a number of observations

* The contrasting size-distribution of manufacturing establishments
can be computed by relating the employment in firms of 20
and over (see Statistic Canada - "Employment, Earnings and Hours",
monthly releases) to the total employment in manufacturing
activity (see the annual - Census of Manufacturing).

TABLE 12

LAKESHORE MANUFACTURING EMPLOYMENT SHARES, 1964-1971

URBAN PLACE	'71	Share Index 1964=100	'70	Share Index 1964=100	'69	Share Index 1964=100	'68	Share Index 1964=100	'67	Share Index 1964=100	'66	Share Index 1964=100	'64	Share Index 1964=100	'61
Toronto	20.6	69.8	21.7	73.5	22.7	76.9	23.9	81.0	24.4	82.7	25.8	87.5	29.5	100	36.3
Scarborough	8.1	144.6	8.0	142.8	8.2	146.4	7.9	141.0	7.6	135.7	6.4	114	5.6	100	-
York	3.3	86.8	3.4	89.5	3.5	92.0	3.4	89.5	3.4	89.5	3.4	89.5	3.8	100	-
East York	3.2	76.2	3.4	80.9	3.4	80.9	3.4	80.9	3.5	83.3	3.9	92.9	4.2	100	-
North York	13.0	119.3	13.0	119.3	12.8	117.4	12.7	116.5	12.6	115.6	11.7	107.3	10.9	100	-
Etobicoke	11.4	114.0	11.3	113.0	11.1	111.0	10.9	109.0	11.1	111.0	10.9	109.0	10.0	100	-
Metro Toronto	60.0	93.5	61.0	95.0	61.8	96.3	62.5	97.4	62.9	98.0	62.4	97.2	64.2	100	-
Mississauga*	5.6	233.3	5.7	237.5	5.3	220.8	4.9	204.2	4.7	195.8	3.8	158.3	2.4	100	-
Oakville	2.7	-	2.8	-	-	-	2.6	-	2.5	-	2.7	-	-	-	-
Burlington	1.2	120.0	1.2	120.0	1.2	120.0	1.2	120.0	1.2	120.0	1.1	110.0	1.0	100	0.7
Dundas	0.2	66	0.2	66	0.2	66	0.3	100	0.3	100	0.3	100	0.3	100	0.3
Hamilton	14.4	90.0	14.5	90.6	13.7	85.6	14.5	90.6	14.9	93.1	15.6	97.5	16.0	100	15.8
Stoney Creek	-	-	-	-	-	-	-	-	-	-	-	-	0.2	-	0.0
Saltfleet Twp.	0.4	-	0.3	-	0.3	-	0.3	-	0.3	-	0.2	-	-	-	-
Streetsville	0.1	-	-	-	-	-	0.1	-	0.1	-	0.1	-	0.1	-	0.2
Milton	0.3	-	0.3	-	-	-	0.3	-	0.2	-	0.2	-	0.2	-	0.2
Brampton Bramalea (Chinguacousy Twp)	1.5	107.1	1.6	114.3	1.4	100	1.4	100	1.3	92.9	2.0	142.9	1.4	100	0.9
	1.9	271.4	1.7	242.9	1.5	214.3	1.3	185.7	1.3	185.7	0.4	57.0	0.7	100	-
Georgetown	0.4	-	0.4	-	0.5	-	0.4	-	0.4	-	0.4	-	0.4	-	0.4
Acton	0.2	-	0.2	-	-	-	0.2	-	0.2	-	0.2	-	0.0	-	0.3
Richmond Hill	0.4	-	0.4	-	0.4	-	0.3	-	0.3	-	0.2	-	0.2	-	0.1
Aurora	0.4	133	0.4	133	0.4	133	0.3	100	0.3	100	0.3	100	0.3	100	0.3
Newmarket	0.2	-	0.2	-	0.2	-	0.2	-	0.2	-	0.2	-	0.2	-	0.3
Markham – Unionville	0.8	-	0.5	-	0.4	-	0.1	-	0.1	-	0.1	-	0.0	-	0.0
Markham Twp.	-	-	0.5	-	0.4	-	0.4	-	0.3	-	0.2	-	-	-	-
Oshawa	5.1)	-)	-	-	-	-	-	-	-	-	-)	-)	-	-	-)
Whitby	1.0)6.9	-)	0.8	-	-	-	-	-	-	-	-)6.3	-)	-	-	-)8.1
Ajax	0.8)	-)	0.8	-	-	-	-	-	-	-	-)	-)	-	-	0.5)
Counties															
Wentworth	15.3	-	15.4	-	14.6	-	15.4	-	15.8	-	16.5	-	16.9	-	16.7
Halton	5.1	-	5.1	-	5.1	-	4.9	-	4.7	-	4.8	-	4.7	-	3.9
Peel	9.5	-	9.5	-	8.8	-	8.1	-	7.7	-	7.1	-	5.3	-	4.4
York	3.3	-	2.9	-	2.8	-	2.4	-	2.2	-	2.0	-	1.6	-	-)
Ontario	6.6	-	5.7	-	6.5	-	6.3	-	6.3	-	6.9	-	6.9	-	6.5) 68.3

* Former Toronto Twp. – Includes Port Credit and Malton

can be made with respect to the spatial pattern of changes in manufacturing shares.

Toronto City experienced a decline in its share of 8.9% between 1964 and 1971 (and 15.7% over the ten year period). York and East York also declined in their shares but to a lesser degree. Counter-balancing increases are found in Scarborough (2.5% 1964-71) North York (2.1% 1964-71) and Etobicoke (1.4% 1964-71). Notwithstanding the well-known east-west bias in employment spread along the lakeshore, North York has increased its share very favourably from 10.9% in 1964 to 13.0% in 1971. Etobicoke grew from 10.0% to 11.4% in the same period. This may reflect the impact of the 401, Don Valley Parkway and Don Mills developments over the last 10 - 15 years.

Overall, however, Metropolitan Toronto has only decreased 4.2% over the seven year period as compared to 8.9% for the city. A similar pattern was noted in population shares; that is, a large proportion of the deconcentrating industries (i.e. moving out of Toronto City) still remain within Metro. Once again, this conclusion can only be suggested since it is not known what proportion of the new suburban employment is drawn from Toronto. However, the net migration from City to suburb is also apparent in industrial migration studies such as that conducted by Collins (1971). Concurrent with the present study, the North Pickering Project is examining industrial location patterns in the general metropolitan area. Table 13 indicates that a decline of 300 manufacturing plants in the City of Toronto in the 1961-65 period was matched by an increase of 576 in the suburbs. Since the entire metropolitan area only gained 276 plants in the same period, it is obvious that the suburb's gains were a direct result of the City's losses.

Substantial increases in employment shares were only found in

TABLE 13.1 Average Annual Birth*and Death Rates[1] and Net Migration Figures for Selected Urban Areas, 1961-65

Urban area	No. of plants		Net change	1961-65		Birth rate	Death rate	Net migration
	1961	1965		Births	Deaths			
All Ontario[2]	11,966	12,559	593	4,283	3,690	7.0	6.1	
Metro[3] Toronto	4,579	4,855	276	1,775	1,438	7.5	6.1	~ 61
City of Toronto....	2,762	2,462	- 300	801	823	6.1	6.3	- 278
Toronto suburbs	1,817	·2,393	576	974	615	9.3	5.9	217
Fringe areas	374	551	177	280	140	12.4	6.2	37
Other urban areas[4]..................	3,196	3,263	67	912	840	6.3	5.9	- 10

[1] Birth and death rates are calculated by expressing total number of births and deaths for 1961-65 as a percentage of total number of plants for 1961-65.
[2] Totals differ from those published in the Census because sawmills are ex-·cluded.
[3] Metro Toronto includes City of Toronto and its suburbs.
[4] Those with at least 40 plants in 1961.

TABLE 13.2 Percentage Frequencies of Births and Deaths*for Urban Size Groups in Ontario, 1961-65

Size of plant by No. of employees	5,000-9,999	10,000-29,999	30,000-89,999	90,000-399,999	City of Toronto	Toronto suburbs	Metro Toronto	Fringe areas
				Births				
2..........	8.0	12.3	14.1	19.4	15.8	26.8	22.3	21.5
4..........	25.6	25.4	23.5	29.5	27.1	21.5	23.8	21.0
7..........	25.6	22.3	21.7	15.8	16.0	16.3	16.2	16.6
11	14.2	13.0	10.7	11.3	15.8	11.1	14.3	14.5
18..........	10.2	6.4	8.2	5.1	8.4	10.3	9.4	11.4
28..........	7.4	7.6	6.6	5.8	7.9	4.4	5.8	6.2
44..........	4.5	5.1	1.8	2.7	4.1	4.4	4.2	3.5
68..........	1.1	3.0	3.2	1.6	2.8	1.4	1.9	2.2
106	3.4	2.3	4.4	2.8	2.1	0.5	1.5	3.1
Totals	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
				Deaths				
2..........	12.7	9.3	9.7	15.2	11.6	21.0	16.0	22.7
4	23.4	25.0	20.2	25.5	25.2	17.4	21.4	18.2
7	21.0	15.0	15.5	21.6	14.2	13.4	13.9	14.5
11	17.7	19.0	22.6	13.0	15.1	15.7	15.5	16.4
18	7.8	11.6	9.7	8.1	9.8	10.6	10.2	10.9
28	5.5	8.0	8.8	7.6	9.7	7.4	8.4	10.0
44	4.3	4.4	7.3	4.0	5.1	6.5	5.8	1.8
68..........	3.1	3.6	2.9	2.3	5.2	3.6	4.5	0.9
106	3.6	4.1	3.3	3.7	4.1	4.4	4.4	4.6
Totals	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Collins, L., Industrial Migration in Ontario, Ottawa, Statistics Canada, (1972).

* "Births" are here defined as establishments appearing in a specific geographical area for the first time. Establishments leaving the area or otherwise ceasing to operate in it, are termed "deaths". Establishments which move from one municipality to another are termed relocations or "migrants". See Collins op. cit., p.85.

Mississauga and Brampton-Bramalea resulting in part from spillover from Metro Toronto. Hamilton and to a lesser degree, Oshawa/Whitby also decreased in their regional shares.

Within the constraints of the data base which had to be generated and the broad sectoral and spatial perspectives employed, aggregate urban economic patterns and forces have been empirically observed. These are used to draw important implications for the economic planning of North Pickering. They are framework or contextual implications which suggest the effects of system-wide or regional, and metropolitan *market forces* on North Pickering over the next 10 - 15 years.

SECTION IV - IMPLICATIONS

This paper concludes with a summary of the prospects for North
Pickering under market conditions and some of the implications
of these for the planning of the new town. Prospects and
implications are reviewed under three headings:

- Growth

- Employment

- Employment Profile

GROWTH

It is evident from the review of the transections of lakeshore
population shares that the eastern areas will, *under market
conditions* likely follow the pattern of increased homogeneity
already apace in the west. With Scarborough and Mississauga
generally equidistant from the Metro core the lag in develop-
ment on the eastern metropolitan fringe should soon be made good.
Given the relatively restricted area for substantial development
along the Pickering-Ajax lakeshore (as compared with the deep
north-south expanses formerly available in Peel), the North
Pickering area offers a ready-made next step for urban expan-
sion.   While it was not possible to develop an urban economic
series for growth analysis, there is nothing from the regional
viewpoint or in the prospect of a new airport to suggest that
North Pickering would have any difficulty in thriving
as a sizeable urban community, *at least in terms of population
growth*. Indeed the lakeshore-metropolitan setting suggests
inevitable market pressures for strong growth. Figure 15
suggests that the next infusion of population in the
metropolitan area will continue the infilling of the "troughs"
and serve to displace further the "shoulders" of the population

concentration, toward the immediate west and east (Pickering-Ajax). The prospects of major additions to servicing capacity, the current housing pressures and the relative contraction of residential opportunities in the Mississauga-Brampton/ Bramalea areas all strengthen the prognostications for increased momentum in the eastern lakeshore.

The review of the changing rate of lakeshore shares over the 1921-71 period highlighted a unique and long-term trend of strong growth in the Pickering-Ajax area (Figure 17). The pattern of development here, in terms of lakeshore population shares, is more akin to the Mississauga and Brampton-Bramalea areas. There is little to suggest that this trend is to be abruptly reversed. Therefore, in terms of general location and situation the prospects for rapid population growth in North Pickering are high.

Some of the implications of this high residential potential are as follows:

1. A particularly onerous task of synchronizing employment and population growth in the planning and development of the new town.

2. The likelihood of a considerable dormitory population in the community.

3. Social and environmental drawbacks associated with intensive, large-scale construction on-site.

4. The need to ensure an adequate rate of growth in personal services and convenince retail opportunities.

5. The opportunity to rapidly reach a sufficient size, in terms of population, to foster a feeling of community identity.

6. The provision of a substantial resident labour force for
    manufacturing and other enterprises.

EMPLOYMENT

If the proposed airport is operational by the early 1980's,
it may have over 20,000 employees by 1986. If, for purposes
of estimating employment, the airport site and the townsite
are treated as one, the employment volume and hence the activity rate
would tend to be high. Currently, the Mississauga-Malton
Airport area has an activity rate of over 40% or around 85%
of the metropolitan rate. If Metropolitan Toronto reached a
rate of 52% by 1986 the North Pickering/Airport area could be
as high as 44.2%. Without an airport, the possible level of
employment in the town, as expressed by the activity rate,
is less certain. The implications outlined here refer to the
no-airport situation. For clarity all employment implications
are discussed in terms of a new town of 80,000 population,
even though the employment profile regularities developed
from this research refer to a town around the 70-90,000
population range.

Generally a relative increase in local employment opportunities
may be expected with increased urban population. However,
significant exceptions to this rule have been observed.
Burlington is an example of an employment-deficient urban
place and hence a major donor of labour force to other places.
Ajax and Brampton/Bramalea on the other hand are relatively
job-rich areas with considerable inflows of labour force. As
noted earlier, the relationship between employment and
population, the activity rate, exhibits considerable spatial

variation. However, for North Pickering, its level of job

provision *relative* to the general metropolitan level is of

particular importance, for functional and estimating reasons.

Expressing possible future activity rates of analogous

circum-metropolitan places, as a proportion of Metro Toronto's,

has provided a useful working indication of the options open

to North Pickering (Table 10).

The estimates of the North Pickering/Metro activity rate

relationships have therefore been inferred from empirical,

if static, regularities. The derived activity rate range

(30 - 36%) is posited as a reliable *working* possibility for

the 1977-'86 period.

A number of implications follow from these estimates of on-site

job provision.

1. With the possibility of a lakeshore activity rate of

    50%*around 1986 and North Pickering's (without an airport)

    between 30% and 36%, the town would be a major supplier

    of labour force for Metro Toronto and some adjacent areas.

There are a number of factors which suggest both a large

labour force and a relatively high labour force participation

rate for North Pickering.**

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*   See footnote on p.28.

** The labour force participation rate is defined as the
   labour force as a percentage of the population 14 years
   of age and over. The 1973 rate in Ontario was 78.4%
   (male) and 41.6% (female). The total rate was 59.7%. The
   1986 total rate could be around 62% (see reports by the
   Ontario Economic Council, especially A Society in Transition,
   1971). The participation rate is introduced at this juncture
   to assess the likely match or mismatch between job supply
   (activity rate) and job demand (participation rate). The
   latter is used to proxy "demand" because by definition, it
   represents that proportion of the employable population
   actually working or seeking jobs.

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   (i)   Provincial population "aging" with considerable

         increase in working-age groups.*

  (ii)   Lakeshore urbanized area typically, has had a high

         concentration of working-age population.

 (iii)   Suburban and new town populations are typically

         young with a buoyant labour force.

  (iv)   General increase in female participation rate

         (over 40%) compensating for small decline in male

         rate (to about 74%).

   (v)   New town characteristic of high participation rate

         related to young families, house purchase and

         other factors.

Combining these, with the prospect of an activity rate range
of 30%-36% suggests a further implication.

2.   The dormitory population and the rate of out-commuting

    may be somewhat higher than usual, given the discrepancies

    between higher than average levels of job demand (as

    expressed by participation rates) and job supply (actvity

    rates).

3.   The greater metropolitan area is an area of complex

    cross-commuting. The "live-work" level for most areas

    is not high.   To provide a large proportion of the

    resident labour force with local job opportunities

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* The "medium" growth population projection currently used
by the Province of Ontario (1986 population - 9,739,000)
indicates an increase in the 20-60 age group of some 83.4%
between 1971 and 1986. This working-age population (20-60)
could account for 55% of the population by
1986 (1971 - 50.1%). The shift is expected to be even more
dramatic in highly urbanized areas.

intuitatively, it can be argued that as a minimum condition,
a considerable surplus of the latter over the former would
have to be provided.

4. In order to illustrate the implications of the *upper* job
    supply (36% activity rate) possibility, given the 50%
    live/work objective, it is necessary to estimate the actual
    demand (participation rate) for jobs from the new town's
    working-age population. The latter is redefined from the
    normal "14 years of age and over" to "20-60 years of age".
    This is posited as a more realistic definition for the
    future. North Pickering could have at least 55% of its
    population in this working-age group (i.e. 44,000), the same
    as the provincial level, by 1986. What proportion of this
    employable population will seek jobs at this time?* Using
    the assumption that 76% of this redefined working-age
    population will work, and seek work, a job demand of 33,440
    is estimated for 1986.** If half of these are to find
    jobs in the town, in line with planning objectives, a minimum
    of 16,720 suitable jobs will be required.

---

*   Using the current definitions (14 years of age and over) the
    Ontario rate could be 62% in 1986. There is no fully reliable
    way of estimating the rate, using the 20-60 age-group definition.
    This age-group is not used by either Statistics Canada or Ontario
    agencies. The latest available data for the Census Metropolitan
    Area indicates that in 1971 the participation rate for the 25-64
    age-group was 74%. Using this rate in lieu of 20-60 age-group
    data understates the rate at the upper level and overstates it
    at the lower. The outcome for present purposes would be of
    little significance. A marginal increase may be expected in the
    1973-86 period due to the continuation of the increase in the
    aggregate female participation rates (1961 - 32%, 1973 - 42%),
    and especially the return of married women to paid employment.
    A further increase might be expected in a new town setting,
    where the population of young families is characterized by sub-
    stantial financial demands due to house purchase. A rate
    of 76% is not unreasonable for North Pickering in 1986/91.

** No account taken of a possible unemployment rate.

If the prospects of the upper activity rate of 36% were to be realised, 28,800 jobs could be available in the town around 1986. As stated previously, the greater metropolitan area is characterized by complex cross-commuting and relatively low levels of live/work in circum-metropolitan places.* A live/work level placing 50% of the local labour force would, on the face of it, be a considerable achievement. If North Pickering achieved this, 16,720 members of the local labour force would take some 58% of available on-site jobs. This is a relatively high level of "self-containment."**

5. Given the overall objective of providing a number of job opportunities in the new town equal to the resident labour force (33,440), the activity rate would have to be raised from the 30-36% suggested by *market conditions*, to 41.8%.

6. If in fact, somewhat less that half of the resident labour force could be found jobs on-site, a secondary objective might be to fill at least half of the actual jobs provided with local residents. With an upper activity rate of 36% this "second-best" objective would place 14,400 members of the resident labour force in on-site jobs. This would raise the rate of out-commuting from 50% to 56.9%.

In summary, even with a relatively high rate (under *market conditions*) of 36%, North Pickering with a population of 80,000 might have to,

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** See the <u>Iterative Lowry Modelling Exercise: Phase I: The North Pickering Project's Lowry Manual</u> (1974). More definitive analysis of the situation was possible after receipt of Statistics Canada flow data ("labour force by place of residence by place of work") for 1971.

** Compare this to present-day (1971) Ajax (33.5%), Whitby (48.9%), Brampton (52.1%), Bramalea (29.4%), or Mississauga (38.7%). Source: Statistics Canada (1974).

- increase its activity rate to around 42% (i.e. increase jobs by 4,800) to meet the basic job opportunity objective i.e. jobs equal to resident labour force,

- achieve a very high local placement of resident labour force, considerably above current levels, to meet the specific live/work objective of 50%,

- accommodate a level of out-commuting of 57% of the labour force if, as a "second best" objective, only half of local jobs were filled by resident labour force.

With the possibility of

a) a lower activity rate (e.g. 30%) and/or,

b) a large labour force seeking jobs*

the live/work objectives could be seriously challenged.

This illustration draws together the implications of a particular activity rate suggested by *market conditions* and the high level of in-town job demands which could be forthcoming from the new town population around 1986, given certain planning live/work objectives.

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* i.e. calculated using the population 14 years of age and over or with more than the provincial proportion (55%) of the new town population in the 20-60 age group.

EMPLOYMENT PROFILE

The broad employment profile or sectoral split possibilities
from both the regional and the lakeshore perspectives have
been established (Figure 22). The implications to be
inferred for North Pickering are as follows:

1. North Pickering should have little difficulty in attract-
    ing a substantial manufacturing and distribution base.
    The town will in fact tend to be relatively dominated
    by these activities, at least along the 30-80,000 popu-
    lation spectrum. Under *market conditions*, around half
    of the community's employment might be expected to be in
    this sector. This is however, less than present-day
    Brampton/Bramalea or Ajax though greater than Mississauga.

2. There may be more variation in the retail sector than
    commonly presumed. A high of a quarter of total employ-
    ment is possible at the 60,000 population level. There
    are a number of factors to suggest that the retail sector,
    even with competition from Scarborough and shopping
    centres south of the site, will tend to account for
    12-15% of employment.

3. On-site construction employment fluctuates enormously
    during various phases and types of activity. However,
    construction employment has been accorded a relatively
    high estimate while the town is being built to a
    population of approximately 80,000. Wholesale employment
    is also expected to be relatively well represented. To-
    gether, these are expected to account for up to 10% of
    employment around the 80,000 population level, and around
    6% thereafter.

4. The service sector, made up of tertiary (personal services)
    and quaternary (business services) activities, may be
    somewhat deficient. This is especially apparent in the
    middle population range (60-80,000) when manufacturing
    activities would tend to dominate the urban economic base.*
    The implications of this tendency reverberate throughout
    many aspects of the community objectives, from those
    relating to a desirable job and socio-economic mix
    to a viable city centre and the "image" of the urban
    place itself. Should the town surpass the 100,000
    population level (read "range"), the service sector
    could be more substantial and more typical of a mature
    city. Up to this level, vigorous promotion of selected
    financial, administrative, management, research and
    other service activities may be required as an integral
    part of the development process.

SYNTHESIS

Drawing these three aspects of the market possibilities
together (growth, employment and employment profile) a
possible gross economic base of North Pickering in 1986 has
been constructed (figure 22). This is more for illustrative
purposes than rigourous prediction. The estimates can be
used as a starting point to assess floor space, industrial
acreage or other land use possibilities. *Most important
however, they do provide a first impression of the gap*

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* However, many manufacturing and distribution activities contain
  substantial "non-production" employees in clerical, research,
  sales and administrative functions. In Ajax and Brampton
  around one-quarter of all manufacturing employees were in
  these service activities in 1970. In Bramalea and Mississauga
  it was over 30%. On average the highest proportions of
  service-type activities are usually found in chemical (45-55%),
  printing (40-45%) and food and beverages (25-45%).

between what "might" happen, as against what is desirable or
"should" occur.

In a later paper the findings of the urban systems analysis
will be synthesized. This synthesis will draw together the
findings and implications of

- the present paper on aggregate regional and lakeshore
  patterns,
- the research and planning literature review, and
- the first impressions of possible urban economic
  profiles suggested by a number of metropolitan area
  manufacturing studies.

APPENDICES

APPENDIX I

GLOSSARY OF TERMS

The following is a brief explanation of some of the technical terms used in this report.

PARTICIPATION RATE -   The labour force as a proportion of the population 14 years of age and over.

ACTIVITY RATE -   Employment in a place expressed as a proportion of the resident population.

LABOUR FORCE -   Usually defined as those persons 14 years of age and over with jobs, or currently seeking employment.

EMPLOYMENT -   Those members of the labour force currently with jobs.

EMPLOYMENT RATE -   Same as "Activity Rate".

EMPLOYMENT STRUCTURE -   The make-up of a place's employment in terms of numbers or proportions employed in various activities, e.g. primary, secondary, tertiary and quaternary or manufacturing, retail, service, wholesale and construction or whatever.

EMPLOYMENT PROFILE -   See "Employment Structure".

SECTORAL SPLIT -   See "Employment Structure".

PRIMARY ACTIVITIES -   Usually confined to extractive or resource-based activities including agriculture, fishing, mining, forestry and trapping.

SECONDARY ACTIVITIES -   Usually covers those activities through which primary resources are processed and fabricated for market or further processing. Includes manufacturing and can include some distribution services.

TERTIARY ACTIVITIES -   Includes all retail and wholesale trade as well as personal services related to consumer final demand.

QUATERNARY ACTIVITIES -   Those management, information, control, research and financial services directly supporting business and management in the production of goods and services.

CENTRAL PLACE -   The urban place engaged in the provision of retail, wholesale and service activities for the resident population and a market area beyond the immediate urbanized area.

URBAN HIERARCHY -

Central Place Theory is a body of
knowledge and concepts which draws
together the relationships between an
urban place's size (population), dis-
tance from other places, functions
(goods and services sold) and its
status in a space-economy. Its status
or rank may be expressed as a hamlet,
village, town, city or metropolis or
as a local, subregional, regional,
provincial, national or primate centre.
The pyramid or hierarchy of urban
places manifests the functional organ-
ization of the markets, local to inter-
national, served by these places.

DORMITORY COMPONENT -

That part of a place's labour force
or population, directly or indirectly
dependent upon external employment
opportunities.

DECENTRALIZATION -

Usually refers to considerable spatial
shifts of population and/or employment
(urban functions) beyond the immediate
sway (daily market area and commuting
zone) of the source urban centre.

DECONCENTRATION -   Usually refers to localized shifts
                                     in population and/or employment
                                     (urban functions) away from a metro-
                                     politan core to the outer suburbs
                                     or surrounding urban places.

EMPLOYMENT (JOB) "SINK" -   Derived from transportation terminology,
                                     this refers to a place which attracts
                                     labour force in-flows to fill concent-
                                     rated employment opportunities, which
                                     exceed the resident labour force.

EMPLOYMENT (JOB) "SOURCE" - As above, refers to those areas which,
                                     being relatively deficient in employ-
                                     ment opportunities, donate labour force
                                     to external employment poles.

APPENDIX II

DATA - NEEDS, COLLECTION, PROBLEMS, SOURCES AND TABULATIONS

In this appendix the urban systems data base developed in the
North Pickering Project will be described. After reviewing the
basic data needs of urban systems analysis for planning the
data base will be described in terms of employment sectors,
static and series data, sources and the spatial coverage. The
next part of the appendix reviews the actual tabulations
prepared in terms of series and static or cross-sectional data.

GENERAL

One of the most serious problems encountered in any research
problem concerned with urban systems is that of data avail-
ability. The present study is no exception. Given the
objectives stated in the first section, the following types
of data were required:

1)   employment by sectors by place of work

2)   population

3)   spatially disaggregated data, and

4)   time series.

The most difficult acquisition was employment by place of work.
The source of this problem derives from the fact that census
publications on labour force statistics have been based on
place of residence. It is only in the recent (1971) census
that employment by place of work has been tabulated. However,
this data has not been available to this study. In most
Canadian studies on urban systems, data based on place of
residence has been used (e.g. Hartwick and Crowley 1972)* and,

*See the companion Literature Review report

therefore, the empirical findings reflect, to some extent, the economic activities located some distance beyond the urban places under review. Similarly, those living outside but working inside the defined urban areas are omitted. The severity of this problem depends on the spatial scale of analysis and the size of urban places. Within the present area of study, this problem is significant since urban places in the lakeshore area are characterized by extensive inter-urban commuting. Conventional place of residence employment data can be of limited guidance in interpreting *urban functional structure,* which is what most studies purport to do.

The Province of Ontario is engaged in a planning programme designed to *manage* and *structure* growth along the lakeshore. The *location* of economic activities, and therefore employment opportunities, is a recognized key element in structuring a preferred urban system. Furthermore, the presence of a primate centre (i.e. Metropolitan Toronto) with two major urban areas (Hamilton and Oshawa) located at each end of the lakeshore corridor will have a strong influence on the economic mix and functional roles of the remaining places in the urban system. Given this city-size distribution, it is reasonable to expect that there exists a few major employment-generating nodes with many satellite and dormitory towns surrounding them. Similarly, the competitiveness of these places to attract various activities will vary over time and space. In view of these considerations it is absolutely necessary to obtain employment by place of work data. Only in this way can the real structural characteristics of urban places and the changes in their economic profiles over time be investigated.

THE DATA BASE

Since current census publications could not provide relevant basic data, it was necessary to search out other sources*. A list of these sources is presented further below. However, additional problems arise when several sources of data are used. First, the definition of urban places may vary from one report to another. In order to determine if the data were comparable, the population figures for the urban places as published in these studies were compared to the census population figures. It was found that in almost all cases the defined urban places corresponded quite closely to the census. Second, data from the secondary sources were available only for one year and hence some of the analysis was restricted to a static cross-sectional approach.

The complete data matrix used in the cross-sectional analysis is shown in Table 14.

Data was collected for three broad employment categories:

- Manufacturing Employment and Labour Force

- Retail Employment and Labour Force

- Service Employment and Labour Force

Later in the study an attempt was made to extract wholesale and construction employment. These categories were selected for conceptual and planning reasons, but were also determined by the stringent data constraints.

It was felt that the service sector was

(a) the most important for urban planning,

(b) the most difficult to detail, and

* The exception to this was manufacturing employment.

TABLE 14

BASIC DATA (1970/72) MATRIX

	POPULATION	MANUFACTURING EMPLOYMENT	MANUFACTURING LABOUR FORCE	PRODUCTION & RELATED WORKERS	SERVICE EMPLOYMENT	SERVICE LABOUR FORCE	RETAIL EMPLOYMENT	RETAIL LABOUR FORCE	TOTAL EMPLOYMENT	TOTAL LABOUR FORCE
Bowmanville	8,947	926	1,310	719	638	1,225	552	475	2,862	3,505
Darlington Twp.	10,768	227	1,900		606	1,125	331	435	1,164	4,140
Oshawa	91,587	20,264	15,655		10,276	12,940	4,468	4,545	37,233	37,980
Whitby	25,324	3,674	3,315		4,106	3,850	1,505	1,205	9,290	10,090
East Whitby	3,407	60	520		360	440	100	130	520	1,355
Ajax	12,515	3,429	1,985	2,743	898	2,143	972	645	5,253	5,500
Pickering	2,537	30	405		220	515	120	70	370	1,090
Pickering Twp.	31,734	1,394	4,905		2,723	4,960	859	1,315	3,340	12,460
Uxbridge	3,077	9	410		98	520	42	150	149	1,180
Uxbridge Twp.	3,868	51	530		755	505	374	185	1,179	1,530
Whitchurch/Stouffville	11,262	263	1,015		1,067	1,650	346	580	2,026	4,600
Markham	36,684	3,500	3,010	2,529	4,099	6,920	1,488	1,790	13,528	15,130
Vaughan	15,873	4,569	2,510		5,928	2,810	1,046	690	14,529	6,945
King Twp.	12,864	140	1,070		715	1,985	258	430	1,305	5,360
Newmarket	18,941	1,004	1,970	674	3,760	3,670	1,024	870	6,033	7,825
Aurora	13,614	1,735	1,435	1,222	1,587	2,430	597	575	4,140	5,565
Richmond Hill	32,384	1,889	3,180	1,432	4,799	6,075	569	1,655	8,622	14,260
Albion Twp.	4,711	32	765		100	650	31	155	163	1,960
Toronto Gore Twp.	1,362	59	200		8	245	3	35	70	580
Bolton	2,984	120	520		191	430	69	155	382	1,190
Caledon East	910	22	200		29	120	23	35	74	380
Brampton	41,211	6,294	7,290	4,663	2,611	6,520	3,052	2,060	13,388	19,150
Bramalea	23,555	7,537	–	5,290	1,600	–	614	–	10,061	–
Chinguacousy Twp.	(7,442)	–	4,605		47	4,165		1,180	55	12,810
Mississauga	156,070	22,251	20,330	15,014	23,724	27,165	6,717	7,680	61,620	68,715
Streetsville	6,840	638	1,240	494	397	1,060	191	330	1,404	3,125
Port Credit	9,442	N/A	1,370		N/A	2,110	N/A	530	735	4,835
Oakville	61,483	11,011	8,500	8,590	3,646	10,370	2,061	2,920	17,199	26,780
Milton	7,018	1,384	1,015	1,053	1,444	1,270	334	400	2,935	3,115
Georgetown	17,053	1,896	3,075	1,438	881	2,390	645	990	3,624	7,270
Acton	5,031	1,070	1,100	851	233	585	209	210	2,200	2,210
Esquesing Twp.	9,416	258	1,720		311	1,155	51	350	620	4,040
Burlington	87,023	4,830	11,680	3,456	7,630	13,375	4,366	4,490	21,138	36,745
Hamilton	309,173	57,095	48,695	44,126	45,707	48,455	12,234	14,580	123,685	133,860
Saltfleet Twp.	18,993	1,914	2,865	1,457	N/A	2,205	N/A	730	5,485	7,705
Dundas	17,208	1,067	2,035	850	1,221	3,200	299	860	N/A	7,165
Metro Toronto	2,086,017	237,833	246,110		471,400	2,153,885	105,800	114,470	980,000	1,010,350
Toronto	712,786	81,964	26,590	60,243	310,400	168,270	51,200	34,120	469,300	359,140
York	147,301	13,251	21,245	8,451	14,700	42,915	4,000	8,120	37,500	72,380
East York	104,784	12,927	12,415	7,939	12,800	28,925	2,800	6,100	32,600	56,270
North York	504,150	51,683	55,045	35,945	60,900	101,955	28,400	32,200	176,200	237,090
Scarborough	334,310	32,460	41,015	22,163	28,500	64,775	6,400	18,965	85,600	151,865
Etobicoke	282,686	45,548	41,440	31,413	44,700	53,340	13,000	14,960	119,500	133,610

(c)   the poorest in terms of data availability.

The service sector is important not so much because of the personal or convenience services which are found in every urban place but because of the relationship between certain service industries and urban status (hierarchical role). The financial, consulting, research, head office, higher educational, administrative and specialized health services are higher-order activities, distinquishing one city from another. The presence or absence of these and other related service activities directly affects the market size and spatial reach of urban places. Their presence or absence therefore make one place a regional centre, another a subregional and another a local centre.

Another reason for emphasizing the service sector was that this is the fastest growing element in our 'post-industrial' society and will account for the bulk of new jobs over the foreseeable future.

A further reason relates to the objective of providing as diverse an economic base, and hence job opportunities and live/work potential, as is possible. New towns have been marked by the dearth of service employment opportunities. This issue therefore may require concerted developmental action in the implementation stages.

A final reason for emphasizing the service sector relates to the first, the status of the community as it might be reflected in its subregional role. The success of the community is inextricably bound up with the image, prestige and activity-concentration of the city centre. City centres will continue to accommodate and foster a diverse range of service, especially

higher-order service activities. This makes these core
activities particularly important for North Pickering's community
identity, city centre and related objectives.

Included in the service category were the following Standard
Industrial Classification (S.I.C.) divisions:

- Transportation, Communications and other Utilities
- Finance
- Insurance and Real Estate
- Community, Business and Personal Service Industries
- Public Administration and Defence

The four employment categories used in the present study follow
closely the classification used by T.A.R.M.S.*, except that
manufacturing is separated from wholesale and construction
employment. Labour force data was also collected according to
the above sectoral classification. Wholesale and construction
data were initially omitted from all computations because of
data constraints. This left an unaccounted residual in
employment computations. Examples of the size of wholesale
and construction employment can be appreciated as follows:

Urban Place	Wholesale, Construction & Other as a proportion of Total Employment %
Metropolitan Toronto	19.0-19.6**
Newmarket	8.1
Aurora	2.6
Richmond Hill	10.8
Markham-Unionville	12.1
Oshawa	6.0
Whitby	15.1 **
Bowmanville	16.6
Ajax	12.8-13.4**
Hamilton	5.7***
Mississauga	14.5
Streetsville	12.7

* The Toronto Area Regional Model Study of the M.T.C.
** Estimated from preliminary Statistics Canada place-of-residence
   data. The others have been estimated as residuals i.e.
   $(E-(E_m + E_s + E_r))$

*** Wholesale Employment only

These residuals do not affect our employment rate (E_j/P)
computations and future estimates. In employment distribution
or sectoral split and activity rate estimates however, they
had to be included. It should be noted that for some aggregate
analysis manufacturing employment was combined with wholesale
and construction employment for some areas (Darlington Township,
East Whitby Township, Pickering, Pickering Township, Uxbridge
and Uxbridge Township, Albion Township, Toronto Gore Township,
Bolton Township, Caledon East and Esquesing Township). This
follows the Metropolitan Toronto Transportation Plan Review
Study (see data sources below). However, this did not present
a major problem since these eleven geographical units have a
relatively small proportion of employment in this composite
category. Therefore, this does not seriously affect the
results discussed in this study.

It should also be noted that for some cities 1971 manufacturing
and total employment data is not available and it was necessary
to utilize 1970 or 1972 data. These are indicated in Table 14.
The use of non-coincidental data was not considered to be a
major problem since the time difference between the available
years was not large enough to include significant changes in
employment structure for the particular cities.

One question which may arise at this point is why the T.A.R.M.S.
data was not used, especially when the Land Use Group of MTC
collected data essentially for the same study area. Several
reasons serve to justify not using the T.A.R.M.S. data bank.
First, manufacturing employment data was published in combination
with wholesale and construction. Since employment data for
the manufacturing sector alone is available from published

reports and census, it was not necessary to utilize composite (manufacturing/wholesale/construction) data. Moreover, manufacturing employment data was available for most urban places from one source (Statistics Canada) which has the additional advantage of consistency. In contrast the T.A.R.M.S. data was based on several sources, Scott's Industrial Directory, local planners, Niagara Lake Erie Transportation Study, Industrial Commissioners and so on. However, it has been observed on our part that each source may provide quite different employment figures when compared to other sources*. Thus, it would appear that in order to be as consistent as possible in the data collection, the fewer the sources the more comparable the data and the less chance of error in the interpretation of the analysis. The use of T.A.R.M.S. manufacturing employment data was further discouraged by the fact that a time series was not available.

In relation to service employment, the Land Use Group noted that collecting this data proved to be quite difficult due to a lack of published sources. Thus, it was decided that the only feasible means of determining service employment was by updating the 1969 T.A.R.M.S. data bank, and assuming that the percentage of population employed in this category in each urban place, remained constant. The same methodology was applied to retail employment. Consequently, the "accuracy" of this projection is questionable particularly for the services sector. It has also been observed by others that T.A.R.M.S.

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* D. Stankovic "Consistency of Data Sources", memorandum to Beryl Dymond, NPP, May 3, 1974.

updating has at times been unreliable*.

The acquisition of time series data was another major problem.
Only population figures (1921-1971) and manufacturing employ-
ment (1964-71)** were available from census publications.
With respect to population data, a considerable number of
changes in the urban boundaries, resulting from definitional
changes and annexation, accrued over the fifty year period.
Since the objective was to investigate spatial temporal
patterns of population growth in the study area, consistency
of definition for urban places was considered of utmost importance.
In some cases, it was found that substantial differences resulted
from the changes in urban boundaries which may result in
misleading inferences if these changes were not taken into
account (e.g. Town of Markham). In order to make the data
comparable, some manipulations on the data have been performed.
The basic unit of observation in the modification was the
township chosen because its boundaries remained relatively
constant, they contained the major urban places under investi-
gation (i.e. very few cities overlap 2 townships) and because
these included a minimum of non-urban populations throughout
the study period. The final "urban zones" and their components
used in the population growth analysis are summarized below:
(see Figure 16).

1.   Clarke township and Newcastle (village)

2.   Darlington Township and Bowmanville (town)

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* J. Tamm, R.P.B. (TEIGA). See also the Metropolitan Toronto
  Transportation Plan Review (M.T.T.P.R.), Report #29.

** Pre-1964 data was not used because of changes in boundaries
   and fewer number of cities covered.

3. Whitby and East Whitby Townships and Oshawa (city) and Whitby (town)

4. Pickering Township + Ajax (town) + Pickering (village)

5. Toronto Township + Mississauga (town) + Port Credit (town) + Streetsville (town)

6. Chinguacousy Township + Brampton (town)

7. Trafalgar Township + Oakville (town) + Milton (town)

8. Esquesing Township + Georgetown (town) + Acton (town)

9. Nelson Township + Burlington (town)

10. Ancaster, Barton, Binbrook, Glanford, and Saltfleet Townships + Hamilton (city) + Dundas (town) + Stoney Creek (town)

11. King and Vaughan Townships + Markham (town) + Richmond Hill (town) + Vaughan (town) + Woodbridge (village)

12. a) Toronto (city) + Forest Hill (village) + Swansea (village)

    b) Etobicoke (township/borough) + Mimico (town) + New Toronto (town) + Long Branch (village)

    c) Scarborough

    d) York

    e) East York + Leaside (town)

    f) North York + Weston (town)

    Metropolitan Toronto: i.e. 12 a-f (above)

This approach runs into problems when a city annexes part of another township other than the one in which it is located. However, this was neither a frequent nor a significant problem. The population time series data by "urban zones" is shown in Table 15.

TABLE 15   LAKESHORE POPULATION SHARES, 1921 - 71

AREA	1921	1931	1941	1951	1961	1966	1971
DURHAM	%	%	%	%	%	%	%
1. Clarke & Newcastle	0.3	0.3	0.2	0.2	0.2	0.2	0.2
2. Darlington & Bowmanville	0.7	0.6	0.6	0.6	0.6	0.6	0.5
ONTARIO							
3. Whitby, E. Whitby } Oshawa, Whitby }	2.3	3.0	3.1	3.2	3.4	3.6	3.5
4. Pickering, Ajax, Pickering	0.5	0.4	0.5	0.6	1.0	1.3	1.3
PEEL							
5(a) Toronto, Miss., Port Credit Streetsville	0.9	1.0	1.1	2.0	3.0	3.6	5.1
5(b) Chinguacousy, Brampton	0.8	0.7	0.7	0.8	1.0	1.7	2.1
5. Peel Total	1.8	1.8	1.9	2.8	4.0	5.4	7.3
HALTON							
6(a) Trafalgar, Milton Oakville	1.0	0.8	0.8	1.0	1.9	2.0	2.0
6(b) Esquesing, Acton, Georgetown	0.7	0.6	0.6	0.6	0.8	0.8	0.9
6. Total - Oakville & Georgetown	1.8	1.4	1.4	1.6	2.7	2.8	2.9
7. Nelson, Burlington	0.6	0.5	0.6	0.8	2.6	2.2	2.5
WENTWORTH							
8. Ancaster, Barton, Binbrook, Glanford, Saltfleet, Hamilton, Dundas, St. Catharines	15.5	15.0	14.7	14.8	13.2	12.3	11.3
YORK							
E. Gwillimbury, N. Gwillimbury, Holland Landing, Sutton	0.8	0.6	0.6	0.6	0.7	0.7	0.7
King, Whitchurch - Stouffville, Aurora, Newmarket	1.7	1.3	1.2	1.3	1.6	1.5	1.3
Markham, Richmond Hill, Vaughan, Whitchurch, Stouffville, Woodbridge	1.4	1.1	1.2	1.5	2.1	2.2	2.8
Toronto City, Forest Hill, Swansea	56.6	54.0	52.4	42.1	28.2	23.7	21.2
Etobicoke, Mimico, New Toronto, Long Branch	1.8	2.6	3.1	5.1	7.9	9.0	8.4
Scarborough	1.2	1.7	1.8	3.3	8.7	9.4	9.9
York }		5.8	6.1	6.1	5.2	4.5	4.4
East York, Leaside }	6.6	3.1	3.6	4.8	3.6	3.2	3.1
North York, Weston }	1.0	1.5	2.1	5.6	11.2	13.9	15.0
METRO TORONTO							
	66.4	68.9	69.5	67.3	65.1	63.9	62.3

With respect to manufacturing employment, data was collected for the period 1964-1971. In this case, the published data was not always available for the same number of places for the same number of years. The more complete years included 1964, 1966, 1968 and 1970. There also existed the problem of confidentiality as was the case for Oshawa and Whitby. Furthermore, modifications could not be made to allow for changes in urban boundaries. However, from visual inspection, it was found that manufacturing activities still tend to be located within most inner city areas, and that changes in size due to annexations, etc. more typically involve increases in residential population than gains in employment. Manufacturing employment data, 1964-1971, is presented in Table 12 .

Time series data for other sectors is practically non-existent. The only source of data of this type was found in the monthly report published by Statistics Canada entitled "Employment, earnings and hours". Unfortunately only large company data (i.e. companies employing 20 or more people) was published thereby giving more weight to the manufacturing sector*. Also, the survey only covered four relevant "urban metropolitan areas":

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* The degree to which the Statistics Canada data biases our view of the urban economic base can be seen from the proportion of total employment concentrated in the large firms (20 employees and over) for various sectors.

Ontario (1970)	%
Manufacturing	91.9
Construction	61.3
Transportation, Communications and other Utilities	87.6
Trade	63.4
Finance, Insurance and Real Estate	85.1
Services	21.3

For the industrial composite it is 59.9%. The picture is especially biased by the exclusion of non-commercial services (health, education etc.) and administration from the larger firm survey while they are included in the employment estimates.

Brampton, Oshawa, Hamilton and Toronto. Nevertheless, it did

provide the only available census data for Oshawa and the only

time series for services, trade etc. For these reasons, it

was decided to use this data, but only as a supplementary

analysis to the main study.

Data Sources:

Reference	Type of Data Used	Geographical units available for
Census Publications 1. 1971 Census of Canada, Catalogue No. 92-702 Volume: 1 - Part: 1 "Population - Census Subdivisions"(Historical)	- population figures 1921-71	- all units in study area (county, township city, town, village borough)
2. Statistics Canada, Annual Census of Manufacturers, Catalogue No. 31-209 "Manufacturing industries of Canada: geographical distribution".	- manufacturing employment (by place of work) 1964 to 1970 inclusively	- urban places - see table
3. Statistics Canada, Catalogue No. 72-002 "Employment, earnings and hours".	- for Hamilton and Toronto: total (industrial composite employment and employment by major sectors - for Oshawa: total employment and employment in manufacturing and trade - for Brampton: total and manufacturing employment only - each month between 1966-1971	Toronto Hamilton Oshawa Brampton
4. i) 1961 Census of Canada, Catalogue No. 94-528, "Labour Force" ii) 1971 Statistics Canada, Labour Force, Computer printout	- employment by place of residence by sector "	- all geographical units "
Secondary Sources	Data	Geographical Units

5. Metropolitan Toronto Transportation Plan Review, "Population and Employment Forecasts for 1981", Sept. 1973	- total employment retail employment other (services) employment offices fcr Metro -1972	- see footnotes from table
6. Kates, Peat, Marwick and Co., "Employment Forecasts: Regional Municipality of York, 1973	- employment by sectors -1972	- Vaughan, Markham Richmond Hill, Aurora Newmarket, King Twp. Whitchurch - Stouffville, East Gwillimbury, Georgina
7. Central Ontario Joint Planning Board, "Employment II - Manufacturing Employment: Its Spatial and Sectoral Structure"	- manufacturing employment 1971/72	Oshawa Whitby Bowmanville
8. Hamilton Planning Board, "1971 Employment Survey: City of Hamilton (data obtained by telephone contact)	- employment by sector	Hamilton (city)

DATA TABULATION

The purpose of this section is to briefly describe the various data manipulations used in the present study, from the three basic data matrices, Tables 1, 4 and 14. The first part considers only the time series data and its manipulations while the second part focusses on the cross-sectional analysis.

1. TIME SERIES

   A. Population Growth (1921-71): Regional Shares

   Some comments have already been made on the problem of urban boundary changes in the analysis of population growth in the region. It was suggested that in order to make the data comparable, it was necessary to aggregate geographical units. The derived "urban

zones" are listed on page xii. A regional "population" share is calculated for each geographical unit or urban zone for each census year, 1921 to 1971. The growth calculations derived from changing shares eliminate the distortion due to initial population size differences. The regional share value is derived as follows:

$$\frac{\text{population of "urban zone" at time } t}{\text{total population of the region at time } t} \times 100\%$$

Table 6 and Figure 15 show the residential shares for each census year. The emphasis here is on the lakeshore patterns of population growth. In order to depict the spatial-temporal patterns of population growth in a clear, concise manner, the regional shares were plotted on a graph (Figure 15). Toronto City is placed in the centre of the horizontal axis with all other urban zones in the lakeshore corridor marked on the same axis according to their relative location to Toronto. The lakeshore is not posited as a functionally closed system. The study area boundaries used are based upon time and data constraints. The regional share values (%) are plotted on the vertical axis. Each time period (6 in total) is plotted on the same graph*. Figure 15 then may be viewed as a series of transections beginning at Hamilton in the western end of the corridor and ending at Newcastle in the eastern end for various years between 1921 and 1971. Each regional share is connected with a continuous straight line so that a regional share profile for each year is suggested.

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* Actual curves do not coincide on horizontal axis for clarity.

Growth trends (decentralization vs. concentration)
all clearly show on this graph as well as distance
relationships.

In order to maintain the functional reality of a corridor
section and not just the physical dimension, four
urban zones were aggregated: Oakville with Georgetown
and Mississauga with Brampton. Toronto was grouped
with East York and York since these three units
displayed similar growth behaviour over the fifty
year period and the remaining boroughs of Scarborough,
Etobicoke and North York were kept separate. Figure 16
shows the refined urban zones within this corridor
setting. A similar approach was made for the northern
corridor from Toronto through North York, Richmond
Hill-Vaughan, Aurora-Newmarket and ending at the "urban
zone" of Holland Landing-Sutton. (Figures 18 & 19)

Finally, Figure 13 shows shares of regional population
on an aggregate level. The issue here is to investigate
growth trends in relation to distance from Toronto,
regardless of direction. Whereas in the above profiles
distance included a directional dimension (i.e. east-west
corridor, north-south corridor), in this context,
distance is defined in terms of distance bands originating
from Toronto. Since the urban zones covered a large
spatial area, rather than measuring distance strictly
in terms of miles, it was decided to use "zones" to
investigate broad distance-growth relationships. Figure 14
shows the zones corresponding to Figure 13. It should

also be noted that the core is defined as the City
of Toronto, York, East York, North York and Etobicoke.
This was done in order to maintain symmetry in Zone 1,
with Mississauga and Scarborough being approximately
equidistant from the core. Furthermore, since
distance relationships are of interest, the exclusion
of Scarborough from the core does not distort the
analysis.

In all the above time series analysis the main objective
is to investigate growth-distance relationships and to
gain some insight into decentralization/concentration
patterns of population distribution through a comparison
of the peaks and troughs for each successive time
period. It should be emphasized however that a decrease
in regional shares for an urban area does not
necessarily mean that the city has experienced a decrease
in population. In reality, a city may experience absolute
growth (i.e. increase in population levels) but at the
same time exhibit a decline in its regional shares.
Changes in regional share values, instead, indicate in
a relative manner how population increments are
distributed throughout the region. Therefore, growth
(or decline) in regional shares is a more useful way
of understanding inter-urban competition within the
region, than the more traditional approaches of
measuring population growth volumes or rates.

B. Time Series - Manufacturing Employment: 1964-71
Table 12 shows regional shares in manufacturing employ-
ment for the years 1961, 1964 and 1966-1971. In this

time series, no aggregation of urban places is performed. As indicated in the raw data matrix, some cities, especially Oshawa and Whitby, have incomplete data resulting from confidentiality constraints. The analysis also concentrates on the 1964-1971 time period because the 1961 information is more aggregated.

C. Time Series - Supplementary Analysis: Changing Employment for Selected Cities

The only published source of employment by place of work, by industry category other than manufacturing is found in the census publication, "Employment, earnings and hours". Several problems exist in the use of these data. First, the level of data dis-aggregation varies according to the size of city. Thus, for Toronto a quite detailed data format is available, whereas data for Oshawa and Brampton for example are much more aggregated. The information is also published on a monthly basis and therefore caution must be used when comparing employment figures for different years. One particular month may not be representative of the overall employment structure of the city because of seasonal fluctuations, strikes, etc. Therefore, in order to derive an "average" employment profile, twelve month averages were taken. In some months, it was quite apparent that strikes had reduced employment levels considerably. These months were excluded from the averaging. Beginning in July, 1971, employment figures were rounded off to the nearest hundredth. However, it is not expected

that this rounding off would affect the results of
the analysis. A more important limitation is that
once again only "large establishments" were surveyed,
resulting in uneven representation of each category
in total employment with a bias toward manufacturing
industries. Another limitation is that only four
urban areas were reported, Toronto, Hamilton, Brampton
and Oshawa. For the urban areas the Census of
Population "Metropolitan Area" definitions were used
for Hamilton and Toronto whereas for Oshawa and
Brampton the definitions were based on a "labour
market" concept. Therefore the latter urban areas are
not directly comparable to the urban area listed in
the annual Census of Manufacturers. Finally, the time
period of analysis was limited to 1966 and onward because
of changes in industrial and geographical classifications.
Given these limitations, it was decided not to place
much emphasis on this part of the study. Nevertheless,
it was included because some insights into sectoral
change may be made, if only in a generalized basis.
The relevant data is given in Table 11 .

2. <u>CROSS-SECTIONAL ANALYSIS: 1971</u>

In this part of the study, the purpose was to investigate
the general patterns of employment distribution,given the
data constraints,along the lakeshore for one year, 1971.
Three types of data manipulations were done.
1. Following the same line of approach of the time
    series, regional shares were calculated for "urban

zones" in the lakeshore corridor. These shares were calculated for population, total employment, manufacturing, retail and service employment. Once again, in order to keep within a corridor setting, Oakville and Georgetown, Mississauga and Brampton "urban zones" were combined. The actual values are given in Table 8. The derived shares are shown in Figure 20. In this table, regional (COLUC) shares in labour force are also given. Due to data limitations several proxies had to be used in deriving regional shares. Data for total regional sector employment, total regional retail and service employment were not available. Therefore, in order to obtain city regional shares in these sectors it was necessary to use labour force data. For example, a city's regional share in service employment and labour force was calculated by taking the total city service employment and labour force as a percentage of the regional service labour force. The implicit assumption in this approach is that the region operates as a relatively closed system, i.e. there is no net employment flow into or out of the region. This assumption may be partially tested by comparing total manufacturing employment with total manufacturing labour force. It was found that total labour force and total employment were approximately equal. These totals do show, at a very general level, that the above assumption is not unrealistic.

Net employment rates for manufacturing and retail were also calculated by subtracting labour force (place of

residence) figures from employment (place of work)

figures and dividing by the 1971 population.

$$\frac{\text{employment}_j^i - \text{labour force}_j^i}{\text{population}\ i\ 1971} = \text{"net"employment rate for } i \text{ in activity } j.$$

Where i is the city and j is the economic sector.
Therefore if the net employment rate is positive, the
implication is that city i is a "job sink"; i.e. the
city attracts workers who commute into city i but live
outside. If the rate is negative the opposite is
assumed, i.e. the city has more workers than jobs and,
thereby, has a dormitory role where a number of
employees travel outside the city to work.